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SUBJECT INDEX TO THIS ISSUE

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THE PROPHYLACTIC USE OF SULFANILAMIDE

IN PATIENTS SUSCEPTIBLE TO RHEUMATIC FEVER

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AND

FRANJO REICHSMAN, M.D.

BALTIMORE

This is the report of a four year study to determine whether sulfanilamide (para - amino - benzene - sulfonamide) administered prophylactically prevents recrudescences of acute rheumatic fever. A preliminary description of the first two years of our work appeared in January 1939.[1]

As Coburn [2] and others have shown, beta hemolytic streptococcus infections usually precede episodes of rheumatic fever, and the antistreptolysin titer of the patient's blood is elevated during the attack.[3] While the beta hemolytic streptococcus is not considered to be the direct and sole cause of rheumatic fever, its close association with periods of rheumatic activity makes it seem probable that the organism plays a significant role in initiating the disease process. If the factor of infection with the beta hemolytic streptococcus could be removed or sufficiently attenuated, it is possible that the active rheumatic state might not reappear in a susceptible person.

The Tréfouëls, Nitti and Bovet [4] in 1935 and Buttle, Gray and Stephenson [5] in 1936 reported that sulfanilamide exerted a protective effect in experimentally induced beta hemolytic streptococcus infections in mice. They injected living organisms intraperitoneally into mice and noted that animals fed sulfanilamide immediately afterward survived longer than unprotected control mice. Coburn and Moore [6] in 1939 described experiments in which guinea pigs were completely protected both from spontaneous and induced cervical adenitis of beta hemolytic streptococcus origin by the prophylactic administration of sulfanilamide.

The drug has been used prophylactically in human beings in attempts to control puerperal infections [7] and epidemics of streptococcic tonsillitis [8] and scarlet fever [9] with varying degrees of success. Administered during measles or whooping cough, it apparently reduces the incidence of complications, especially bronchopneumonia.[10] It is also being used routinely in the Johns Hopkins Hospital and elsewhere in the prophylaxis of infections following compound fractures and extensive lacerations.

Several articles have been published on the effect of sulfanilamide administered during the course of acute rheumatic fever and chorea, including those by Swift, Moen and Hirst [11] and Massell and Jones.[12] These authors and others agreed that clearcut beneficial results from such treatment were absent and that toxic symptoms, notably increased fever, tachycardia and rash, were almost universal. In general, the period of treatment was short; Swift and his associates gave moderate doses to 8 patients over a period of from three to seven days. Massell and Jones, using a larger dose, maintained the therapy from a few days to two months. They did not state the number of patients treated for periods longer than two weeks. On the basis of these studies, it has been generally accepted that the use of sulfanilamide is contraindicated in acute rheumatic fever. The fact that sulfanilamide does not behave in such a manner in other diseases suggests that further study of this apparently toxic reaction might throw light on the pathogenesis of rheumatic fever.

At the same time that our original report appeared, Coburn and Moore [6] reported studies on the prophylactic use of sulfanilamide in several groups of rheumatic children. Administered to rheumatic subjects after the onset of streptococcic pharyngeal infections, the drug did not prevent rheumatic recrudescences. However, seventy-nine out of eighty children to whom sulfanilamide was administered continuously throughout the winter escaped hemolytic streptococcic infection and signs of rheumatic activity. In this, Coburn's and

From the Department of Medicine, the Johns Hopkins Hospital and University.

The authors had the benefit of the interest and advice of Dr. Perrin H. Long during this study.

1. Thomas, Caroline B., and France, Richard: A Preliminary Report of the Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever, Bull. Johns Hopkins Hosp. **64**: 67 (Jan.) 1939.

2. Coburn, A. F.: The Factor of Infection in the Rheumatic State, Baltimore, Williams & Wilkins Company, 1931.

3. Coburn, A. F., and Pauli, R. H.: Studies on the Immune Response of the Rheumatic Subject and Its Relationship to Activity of the Rheumatic Process: VI. The Significance of the Rise of Antistreptolysin Level in the Development of Rheumatic Activity, J. Clin. Investigation **14**: 769 (Nov.) 1935.

4. Tréfouël, J.; Tréfouël, J. (Mme.); Nitti, F., and Bovet, D.: Activité du p-aminophénylsulfamide sur les infections streptococciques expérimentales de la souris et du lapin, Compt. rend. Soc. biol. **120**: 756 (Nov. 23) 1935.

5. Buttle, G. A. H.; Gray, W. H., and Stephenson, D.: Protection of Mice Against Streptococcal and Other Infections by P-Aminobenzenesulfonamide and Related Substances, Lancet **1**: 1286 (June 6) 1936.

6. Coburn, A. F., and Moore, L. V.: The Prophylactic Use of Sulfanilamide in Streptococcal Respiratory Infections, with Especial Reference to Rheumatic Fever, J. Clin. Investigation **18**: 147 (Jan.) 1939.

7. Colebrook, L., and Kenny, M.: Treatment with Prontosil of Puerperal Infections Due to Hemolytic Streptococci, Lancet **2**: 1319 (Dec. 5) 1936. Johnstone, R. W.: Prophylactic Use of Sulfonamide Preparations in Obstetric Practice, Brit. M. J. **1**: 562 (March 12) 1938.

8. Smith, A.: Chemotherapy of Streptococcal Infections, Particularly Streptococcal Tonsillitis, Lancet **2**: 1064 (Nov. 6) 1937.

9. Sako, W.; Dwan, P. K., and Platou, E. S.: Sulfanilamide and Serum in the Treatment and Prophylaxis of Scarlet Fever, J. A. M. A. **111**: 995 (Sept. 10) 1938.

10. Thompson, A. R., and Greenfield, C. R. M.: Chemotherapy in Measles and Whooping Cough Prophylaxis and Treatment of Complications, Lancet **2**: 991 (Oct. 29) 1938.

11. Swift, H. F.; Moen, J. K., and Hirst, G. K.: The Action of Sulfanilamide in Rheumatic Fever, J. A. M. A. **110**: 426 (Feb. 5) 1938.

12. Massell, B. F., and Jones, T. D.: The Effect of Sulfanilamide on Rheumatic Fever and Chorea, New England J. Med. **218**: 876 (May 26) 1938.

Moore's findings and ours were in virtual agreement. Unfortunately, while their study included twenty-five children living in their normal home environment, the rest were segregated from infection in a convalescent home, and adequate control studies were not made.

The present study has been kept on the simplest possible basis: Small daily doses of sulfanilamide were administered over a period of months to adolescents and young adults who had suffered from one or more attacks of acute rheumatic fever, the last one occurring within three years of their inclusion in this study. Other patients with similar history were observed as controls each winter. With minor exceptions, we adhered to a uniform dose throughout chosen with the idea of giving a dose definitely smaller than a therapeutic one yet large enough to maintain an ascertainable level of sulfanilamide in the blood. Sulfanilamide was the only drug used throughout the four year study; we made no attempt to evaluate any of the newer sulfonamide derivatives such as sulfapyridine. In general, treated patients were started on sulfanilamide during October and November and were given the drug continuously throughout the winter and spring, the drug being stopped in June. The sedimentation rate was determined by the method of Wintrobe[13] at every visit of both treated and control patients. By this technic, the upper limit of normal for the corrected sedimentation rate at the end of an hour is 10 mm. for both males and females.

SELECTION OF PATIENTS

Almost all of the patients had been observed in the medical wards of the Johns Hopkins Hospital during one or more attacks of acute rheumatic fever and were transferred to the cardiac clinic to be followed after discharge. A few patients had been observed during their acute illnesses in the wards of other hospitals[14] and through the kind cooperation of the staffs of those hospitals were transferred directly to the cardiac clinic. The patients were chiefly drawn from the middle and laboring classes of society; only a few were destitute.

In all, 90 patients were followed in the treated and control groups combined (charts 1, 2, 3 and 4). Twenty-one patients were observed throughout the four year period; 21 were followed for three years, 24 for two years and 17 for one year. In addition, 4 died (2 during the third and 2 during the fourth year of observation, and 3 patients were lost sight of, 1 during the second and 2 during the third year of observation.

The distribution of cases between the treated and control groups was not made entirely by lot. Each year except the first[1] some of the patients were placed in the treated and some in the control group by the alternation of patients who were similar in age, length of history of rheumatic fever and degree of cardiac involvement. After one year of treatment half were shifted to the control group and half kept in the treated group by the same process. However, several additional factors operated to take patients out of the treated into the control group:

1. Some patients were entirely willing to take the treatment but were not able to attend the cardiac clinic for observation regularly enough. Generally, such patients were employed[15] or lived at a considerable distance.

2. Some patients did not want to be treated or did not want to attend the cardiac clinic frequently even though they were able to do so. These were usually young people who felt perfectly well and who refused to believe that there was any-

TABLE 1.—*Social, Economic and Personality Factors and Cardiac Status of Treated and Control Patients*

	A.*						B.			
	Group Treated with Sulfanilamide (55 Patients)		Total Control Group (67 Patients)		Controls Who Had Major Rheumatic Episodes (14 Patients)		Controls Never Receiving Sulfanilamide (35 Patients)		Controls Who Received Sulfanilamide Other Seasons (32 Patients)	
Social, economic and personality factors	No.	%	No.	%	No.	%	No.	%	No.	%
Nutrition										
Good	23	41.8	21	31.3	4	28.6	10	28.5	11	34.3
Fair	32	58.2	46	68.7	10	71.4	25	81.5	21	65.7
Poor	0	0	0	0	0	0	0	0	0	0
Housing										
Good	14	25.5	15	22.4	3	21.4	7	20.0	8	25.0
Fair	35	63.6	40	59.7	5	35.7	22	62.8	18	56.2
Poor	6	10.9	12	17.9	6	42.9	6	17.2	6	18.8
Intelligence										
Good	14	25.5	14	20.9	3	21.4	9	25.7	5	15.6
Fair	36	65.4	44	65.6	7	50.0	22	62.8	22	68.8
Poor	5	9.1	9	13.5	4	28.6	4	11.5	5	15.6
Cooperation										
Good	27	49.0	15	22.4	5	35.7	6	17.2	9	28.1
Fair	28	51.0	37	55.2	6	42.9	14	40.0	23	71.9
Poor	0	0	15	22.4	3	21.4	15	42.8	0	0
Cardiac status †										
Valvular disease										
Present	39	70.9	45	67.2	10	71.4	23	65.7	22	68.8
Borderline	6	10.9	6	8.9	2	14.3	3	8.6	3	9.3
Absent	10	18.2	16	23.9	2	14.3	9	25.7	7	21.9
Cardiac enlargement										
Present	21	38.2	21	31.3	6	42.9	9	25.7	12	37.5
Borderline	8	14.5	9	13.5	1	7.1	4	11.5	5	15.6
Absent	26	47.3	37	55.2	7	50.0	22	62.8	15	46.9
Functional capacity										
II	4	7.3	2	3.0	2	14.3	0	0	3	9.3
Borderline	5	9.1	4	6.0	1	7.1	2	5.7	2	6.3
I	46	83.6	61	91.0	11	78.6	33	94.3	27	84.4

* A, Comparison of treated group, control group and control patients who had major rheumatic episodes during observation; B, comparison of control patients who never received prophylactic treatment with those control patients treated during other seasons.
† I and II refer to the classes defined by the New York Heart Association in the classification of functional capacity of cardiac patients.

13. Wintrobe, M. M.: The Erythrocyte Sedimentation Test, Internat. Clin. **2**: 34 (June) 1936.

14. Baltimore City Hospital (N. P.), Sinai Hospital, (M. B., H. E., N. S., E. Z.), Union Memorial Hospital (M. H., G. H., G. N.).

15. On the other hand, many employed patients came in frequently and were in the treated group.

thing serious the matter with them or any imminent danger of recurrent illness. They were not necessarily unintelligent or unhygienic in other ways.

3. Some patients were selected by lot to take sulfanilamide and agreed to do so but repeatedly forgot to take the drug, lapsed in frequent attendance at the clinic and when they did come showed no detectable sulfanilamide in the blood. After several attempts to rally them into better cooperation they were transferred to the control group.

Two patients were transferred from the treated to the control group on account of mild symptoms of toxicity from sulfanilamide which recurred when repeated attempts to administer the drug were made.

The patients in groups 3 and 4 received only a small amount of sulfanilamide each, taken in a discontinuous fashion over a period of weeks. They were, therefore, never included in the treated group but were placed permanently in the control group. Sulfanilamide therapy was never again attempted in subsequent years for such patients.

To offset these patients who through necessity were shifted into the control group still other new ones were added to the treated group. It cannot therefore be said that the treated and control groups were identical, but efforts were constantly made to keep them as nearly comparable as possible. For instance, while factors 1, 2 and 4 prevented certain patients from being treated, their diet, housing, intelligence, general hygiene and cardiac lesions were not essentially different from those in the treated group. On the other hand, some of the uncooperative ones (group 2, previously mentioned) and many of those who lapsed during therapy were definitely inferior to those in the treated group. These factors have been analyzed and summarized in table 1. As will be seen later (table 6), however, relapses in control patients occurred as often among the well endowed as among the poorly endowed. Finally, 32 of the patients were in the treated group part of the time and in the control group part of the time, so that here the equivalence was exact.

The patients varied in age from 7 to 37 years at the time of entering the study. The ages as listed in charts 1, 2, 3 and 4 are referred to the date of entry, indicated by the heavy vertical line. By far the greater number of patients were between the ages of 14 and 26. The age distribution was similar in the treated and control groups (table 2). Since patients under 14 were not available in the Department of Medicine, we were able to observe only five children under that age, four of whom were generously transferred to our care from other hospitals.

HISTORY OF RHEUMATIC FEVER

Every patient had had one or more "major rheumatic episodes," the last one occurring within three years of entering the study. A major episode is defined as one in which the patient is ill enough to be confined to bed at home for at least a week or to be hospitalized and in which fever, polyarthritis, active carditis, chorea or other signs are unequivocal. Undoubted chorea is considered a major episode only in the event the patient affected has suffered from other forms of rheumatic fever as well. All major episodes occurring before or after entering the study are indicated in the charts by black blocks. No attempt has been made to illustrate the severity or duration of the attack or the months in which the attack occurred, except to show, during the period of study, whether the attack came before, during or after the period of prophylactic treatment.

A minor episode signifies a definite but less incapacitating form of rheumatic fever, such as transiently painful, swollen joints or mild choreiform movements. A questionable episode includes any illness in which the diagnosis of rheumatic fever is in doubt, as well as such isolated symptoms as epistaxis, sore throat, arthralgia or precordial pain in a rheumatic person. The minor and questionable episodes occurring during years before entering the study are often poorly or incorrectly remembered, and so no attempt has been made to chart them. Those occurring during the period of study, therefore, are not charted but are described later in this paper.

Without discussing in detail the cardiac status of the 90 patients studied, it may be briefly stated that 62 patients, or 68.9 per cent, had definite chronic rheumatic endocarditis with involvement of one or more of the valves of the heart; 9 patients, or 10 per cent, had questionable valvular disease, and 19, or 21.1 per cent, had no definite signs of endocarditis and were classified as patients with potential heart disease. Thirty patients (33.3 per cent) had definite cardiac enlargement, 12 patients (13.3 per cent) had hearts that were questionably enlarged and 48 patients (53.4 per cent) had hearts of normal size. Finally, the functional cardiac capacity was definitely impaired in only four instances (4.4 per cent) and questionably impaired in seven others (7.8 per cent); by far the greatest number of patients (79, or 87.7 per cent) were able to carry on ordinary physical activity without any discomfort whatsoever. The distribution of these factors among the treated and control groups is analyzed in table 1.

TABLE 2.—*Age Distribution of Treated and Control Patients*

Age	Group Treated with Sulfanilamide	Controls Who Had Never Received Sulfanilamide	Controls Who Received Sulfanilamide in Other Seasons	Total Control Group
7-13	2	3	0	3
14-19	29	22	17	39
20-29	15	3	9	12
30-37	9	7	6	13
Total	55	35	32	67

ADMINISTRATION OF SULFANILAMIDE

Dosage.—During the season of 1936-1937, the treated group of patients received 0.9 Gm. (actually 15 grains) of sulfanilamide daily, divided into three doses. In the subsequent three seasons of 1937-1938, 1938-1939 and 1939-1940, 1.2 Gm. (20 grains) was administered daily, divided into two doses taken twelve hours apart.[16] While theoretically it would be preferable to divide the medication into three or four doses distributed throughout the day, the increased likelihood of doses being skipped made it seem wise to reduce the routine to the simplest possible form. Each patient's schedule of medication was arranged with him with especial regard to convenience. The morning dose was usually taken on first arising or just before breakfast, the second dose exactly twelve hours later.

In the effort to protect patients during the winter and spring when rheumatic recrudescences are most frequent, the season of prophylactic treatment was begun during October and November and continued until June. Since a small number of patients are seen at each

16. The patients under 14 years of age were given 0.9 Gm. daily; in 1 (M. H.), the dose was later increased to 1.2 Gm. In several patients who excreted sulfanilamide with great rapidity the dose was raised to 1.8 Gm. a day.

biweekly session of the cardiac clinic it took several weeks for the whole group to start and stop the drug. With two exceptions,[17] no patient was given sulfanilamide during the months of July, August or September. The average length of a season of prophylactic therapy was eight months, the season varying from seven to nine months. In the last two years 5 patients began late and took sulfanilamide for shorter periods, and this is indicated in chart 2. The cross-hatched areas in charts 1 and 2 indicate the seasons when prophylactic treatment was administered to each person.

FREQUENCY OF VISITS AND CONTINUITY OF TREATMENT

As a rule the patients receiving sulfanilamide were seen in the cardiac clinic at three week intervals throughout the period of treatment. Actually most of

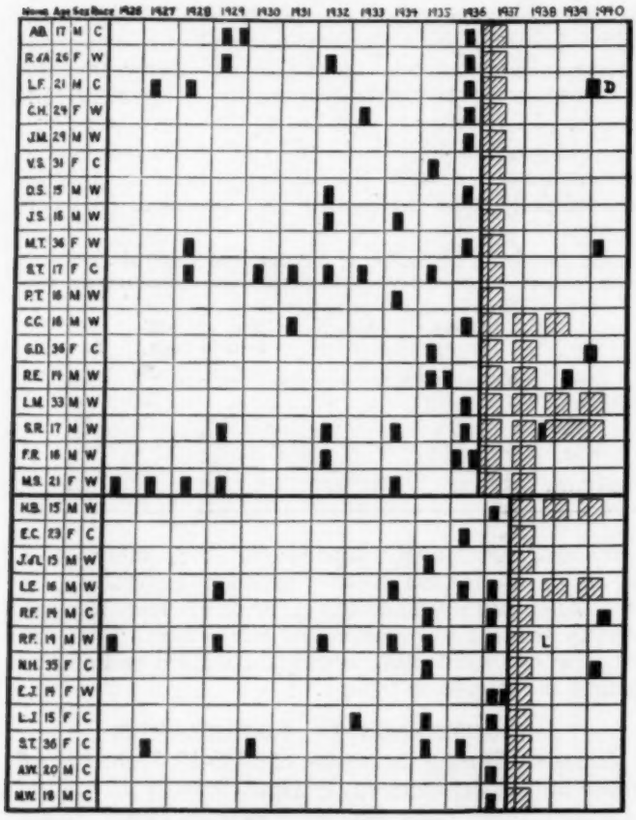
Name Age Sex Race 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940
A.B. 17 M C
R.dA 26 F W
L.F. 21 M C
C.H. 29 F W
J.M. 29 M W
V.S. 31 F C
O.S. 15 M W
J.S. 16 M W
M.T. 36 F W
S.T. 17 F C
P.T. 16 M W
C.C. 16 M W
G.D. 36 F C
R.E. 19 M W
L.M. 33 M W
S.R. 17 M W
F.R. 16 M W
M.S. 21 F W
H.B. 15 M W
E.C. 23 F C
J.dL. 15 M W
L.Z. 16 M W
R.F. 19 M C
R.F. 19 M W
N.H. 35 F C
E.J. 19 F W
L.J. 15 F C
S.T. 36 F C
A.W. 20 M C
M.W. 18 M C
D
L

Chart 1.—Major episodes of acute rheumatic fever in patients taking sulfanilamide prophylactically who entered the study in 1936 and 1937. The heavy vertical lines indicate the date of entering the study. The heavy horizontal line divides the groups entering the study in successive years. Each black block represents a major rheumatic episode. Cross-hatched areas indicate periods of prophylactic sulfanilamide therapy. *D*, died; *L*, lost.

them were seen more frequently when the drug was first given; later, when everything was running smoothly, the interval was sometimes lengthened a little. Some of the patients in the control group were seen as frequently as those in the treated group; many were seen less frequently. Some were checked at half-yearly or yearly intervals. In order to follow every patient up to July 1, 1940, the date this study closed, a few control patients who could not be brought into the cardiac clinic were questioned by letter as to occurrence of rheumatic fever or other illness. All but 1 [18] replied that they had been perfectly well.

17. These 2 patients, S. R. and C. d'L., had had attacks of rheumatic fever during the summer months of the previous year.

18. M. R.: See later in article under "questionable episodes."

CONCENTRATION OF SULFANILAMIDE IN THE BLOOD

Determinations of the concentration of sulfanilamide in the venous blood were begun in April 1937 and were subsequently made at each visit during the periods of treatment. The method of Marshall [19] was used. When 0.9 Gm. of the drug was taken daily in three divided doses the concentration of the drug in the blood fluctuated between 1.0 and 3.0 mg. per hundred cubic centimeters. On 1.2 Gm. a day divided into two doses, patients were usually found to have a blood sulfanilamide level varying between 1.8 and 3.0 mg. per hundred cubic centimeters during the morning, one and a half to five and a half hours after the morning dose. The level at times rose even higher and occasionally fell low. Twelve hours after the last dose had been taken the blood sulfanilamide level was below 1.0 mg. per hundred cubic centimeters, and twenty-four hours after a dose only a trace of sulfanilamide was found. There was no tendency toward accumulation of the drug when administered over a long period of time.

TOXIC EFFECTS

Most of the patients took the drug without the slightest discomfort. The toxic symptoms which follow larger therapeutic doses were rarely if ever observed on the small daily dose administered during this study. We have never encountered cyanosis, anemia, granulocytopenia, acidosis, severe dermatitis or febrile reactions. Despite the experience of Coburn and Moore,[6] there was no tendency toward loss of weight or inability to gain weight among our patients. A few patients complained of vertigo or drowsiness during the first few days of drug therapy but subsequently felt perfectly normal. One rather overconcerned boy stated that he "could not think as well," but he continued the drug during two seasons and performed his clerical work satisfactorily.

During the first two seasons only a few extremely slight reactions were encountered; 3 patients complained of transient vertigo, and 2 noted mild erythematous eruptions. None of the patients stopped the drug permanently on account of toxic symptoms. During the seasons of 1938-1939 and 1939-1940, 2 patients were transferred from the treated to the control groups because of mild reactions:

T. d'R., an Italian boy, whose mother and father were subject to urticaria and hay fever respectively, complained of urticaria which first appeared four weeks after he started sulfanilamide and which disappeared and reappeared when the drug was stopped and then resumed. Later he was again started on sulfanilamide in doses of 0.15 Gm. a day. He complained of drowsiness, fatigue and nausea after taking the drug three days and refused to continue to take it.

N. S., a Jewish boy of 7 years, was started on 0.9 Gm. of sulfanilamide daily when he was clinically and symptomatically well, with normal temperature and sedimentation rate. The white blood cell count, however, was recorded as 19,150, with 50 per cent polymorphonuclears and 5 per cent juvenile neutrophils. This count was not checked. Three days later a mild infection of the upper part of the respiratory tract developed in him, and his mother thought he looked red and hot. When seen a week after starting the drug he complained of fatigue, his throat was slightly injected, his temperature was 99.4 F. and his sedimentation rate normal. The blood sulfanilamide level was 2.0 mg. per hundred cubic centimeters. His white blood cell count was now 4,300, with 17 per cent juvenile and 28 per cent adult polymorphonuclears—a total of 45 per cent. On account of the leukopenia the drug was stopped. During the next two visits his white cell count rose to 9,500

19. Marshall, E. K., Jr.: Determination of Sulfanilamide in Blood and Urine, Proc. Soc. Exper. Biol. & Med. **36**: 422 (April) 1937.

and then to 11,550, with 4 per cent and 11 per cent juvenile forms and 61 per cent and 37 per cent adult neutrophils respectively. He was again started on sulfanilamide; 0.3 Gm. was administered one evening, and 0.3 Gm., the next morning. When he awoke that morning his face was "very red," and the redness persisted, although he had no complaints, so he was brought to the hospital. The boy's cheeks were crimson, with marked circumoral pallor. There was a slight erythema over the flexor surfaces, not accentuated in the axillary folds. He seemed tired and "toxic." There was no fever, no strawberry tongue or injection of the pharynx. The leukocyte count was 14,150. The drug was stopped, and his parents observed that the redness of the face soon disappeared. Seen two days later he seemed normal; the leukocyte count was 6,700, with 3 per cent juvenile and 38 per cent adult neutrophils.

On account of the drop in the total leukocyte count without granulocytopenia on two occasions, as well as the erythema and the feeling of lassitude, the drug was permanently stopped in this instance.

Other toxic reactions, which did not necessitate permanent stopping of the drug, were as follows:

In D. R. an itching rash developed over the dorsal surfaces of her extremities, associated with erythema, nine days after starting sulfanilamide. The rash disappeared two days after the drug was stopped. Two weeks later the patient started to take 0.6 Gm. a day, and in twenty-three days she noted an itching rash on her wrists which again disappeared promptly on discontinuing the pills. Three days later she was started once more on the drug, which was increased rapidly to the full dose without untoward effects, and continued for the remainder of the season.

G. H., aged 9, may have had slight drowsiness and fatigability during the first eighteen days of the administration of 0.9 Gm. of the drug daily, and his mother noted a little rash on the calves of his legs but nowhere else. These questionable effects were not noticed during subsequent months of sulfanilamide therapy.

Although the hemoglobin, volume of packed red cells and sedimentation rate were carefully followed throughout the four year study, frequent determinations of the white blood cell total and differential count were not made until the season of 1939-1940. Of 14 patients receiving sulfanilamide for the first time in 1939-1940, 8 had normal white blood cell counts throughout the period of treatment. Five showed a drop in total white blood cell count to levels between 4,000 and 5,000 without granulopenia. In two instances the leukopenia was present on one visit to the clinic only, eleven days and twelve weeks after starting sulfanilamide. In 2 other cases the leukopenia, first noted five and a half weeks and twelve weeks respectively after beginning sulfanilamide, persisted for a three month period. These 4 patients continued and completed their sulfanilamide courses without untoward effects. The fifth patient, N. S., is described in detail earlier in this section. One patient (whose total leukocyte count was 4,800 when the drug was started) showed a drop to 2,950 leukocytes in three weeks and to 2,600 with 60 per cent granulocytes four days later. Sulfanilamide was stopped. The leukocyte count rose to 5,500 in two weeks. Sulfanilamide was again started and continued for the next six months; the leukocyte count fluctuated between 4,300 and 5,400 throughout this period.

Finally, 1 patient (G. C.) who took sulfanilamide in both 1938-1939 and 1939-1940 and whose usual leukocyte count fluctuated between 4,400 and 6,500 began the drug late in October 1939 on a day when her leukocyte count was 4,500. The white blood cell count remained between 4,500 and 4,900 until the end of January 1940. Early in February she had influenza and from then until the last of April her leukocyte count lay between 3,150 and 3,750, returning to more than 5,000 thereafter. The drug was not stopped during the period of leukopenia.

Thus we observed no alarming reactions from the administration of sulfanilamide during our four years of study, nor were the patients disturbed by symptoms more distressing than drowsiness or itching. Some drop in total leukocyte count over a period of days or weeks was not uncommon, but the phenomenon was self limited and was never accompanied by granulopenia.

EFFECT OF TREATMENT

Beta Hemolytic Streptococcus Infections.—None of the patients receiving sulfanilamide prophylactically suffered from acute beta hemolytic streptococcus infection during the period of treatment. Among the control patients, A. M. was hospitalized in April 1937, with an acute sore throat; pharyngeal culture showed 98 per cent beta hemolytic streptococci. In October 1938, E. J. had an infection of the leg from which an almost pure culture of beta hemolytic streptococci was obtained.

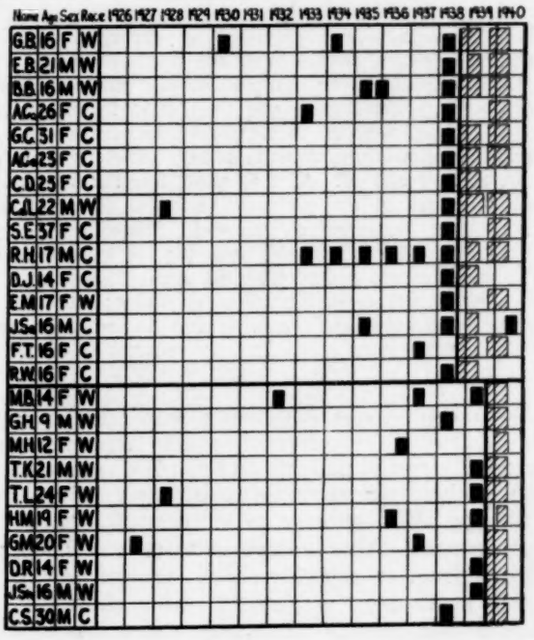
Name Age Sex Race 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940
G.B. 16 F W
E.B. 21 M W
B.B. 16 M W
A.C. 26 F C
G.C. 31 F C
A.C. 23 F C
C.D. 23 F C
C.L. 22 M W
S.E. 37 F C
R.H. 17 M C
D.J. 14 F C
E.M. 17 F W
J.S. 16 M C
F.T. 16 F C
R.W. 16 F C
M.B. 14 F W
G.H. 9 M W
M.H. 12 F W
T.K. 21 M W
T.L. 24 F W
H.M. 19 F W
G.M. 20 F W
D.R. 14 F W
J.S. 16 M W
C.S. 30 M C

Chart 2.—Major episodes of acute rheumatic fever in patients taking sulfanilamide prophylactically who entered the study in 1938 and 1939. The symbols are as given in chart 1.

Pharyngeal cultures were taken on treated patients at each visit at intervals of several weeks and at somewhat longer intervals on control patients, throughout the seasons of 1937-1938, 1938-1939 and 1939-1940. A few cultures were taken in 1936-1937. A total of 500 cultures was taken on treated patients during the period of sulfanilamide administration. Twenty of these, or 4.0 per cent, were positive for the beta hemolytic streptococcus (table 3). Eight of the positive cultures were obtained from two persons who had had fairly large numbers of beta hemolytic streptococci in the flora of the throat just preceding the administration of sulfanilamide. One patient (G. D.) had 40 per cent beta hemolytic streptococci in the pharyngeal culture before sulfanilamide was started, and three out of eleven cultures showed 5 per cent of the organism after the drug was started.

R. H., a 17 year old Negro boy, had been hospitalized for two months with his sixth attack of rheumatic fever in six years. Symptoms during the first week in the hospital included sore throat, abdominal pain, painful tender joints and cough

with bloody sputum. He had huge infected tonsils, mitral stenosis and aortic insufficiency with changing electrocardiograms. A pharyngeal culture on admission showed one colony of beta hemolytic streptococci; two subsequent ones showed normal flora. The sedimentation rate, elevated at first, fell to normal three weeks before discharge and there remained.

Ten days after leaving the hospital in December he came to the cardiac clinic. He was symptom free, with a normal sedimentation rate, and remained so throughout the year. Pharyngeal culture, however, on the first and second visit to the clinic showed 50 per cent and 40 per cent beta hemolytic streptococci. Sulfanilamide was then started; successive cultures of material from the throat during the next fourteen weeks showed the following percentages of beta hemolytic streptococci: 40, 50, 5, 5, 0 and 10. At that point tonsillectomy was performed; culture of the macerated tonsillar tissue showed 50 per cent beta hemolytic streptococci. Subsequent pharyngeal cultures showed only normal flora for the remainder of the sulfanilamide course and through the summer months. The boy took sulfanilamide again the following winter; nine pharyngeal cultures showed normal flora, while one showed 1 per cent beta hemolytic streptococci. He had no recurrence of rheumatic fever.

TABLE 3.—*Comparison of the Incidence of Positive Pharyngeal Cultures in the Treated and Control Groups*

	Treated Group During Sulfanilamide Season			Control Group During Control Season		
		Throat Cultures Positive for Beta Hemolytic Streptococci			Throat Cultures Positive for Beta Hemolytic Streptococci	
Season	Total Number of Throat Cultures	No.	%	Total Number of Throat Cultures	No.	%
1936-1937 and 1937-1938.	166	8	4.7	71	10	14.1
1938-1939	136	7	5.1	100	12	12.0
1939-1940	198	5	2.5	165	19	11.5
Total for 1936-1940	500	20	4.0	336	41	12.2

Aside from these 2 patients who were carriers of beta hemolytic streptococci when sulfanilamide was started, 10 treated patients had single (in two instances, two) positive throat cultures during the four seasons of therapy. The average proportion of beta hemolytic streptococci in these isolated cultures was 9.3 per cent.

In contrast to the carriers G. D. and R. H., mentioned previously, 2 patients who showed positive cultures immediately preceding sulfanilamide therapy became free from beta hemolytic streptococci as soon as the drug was started:

G. H. had 80 per cent and 50 per cent beta hemolytic streptococci ten days before and on the day of starting sulfanilamide. After eighteen days on the drug a culture of material from his throat showed only normal flora, and this state of affairs persisted throughout the season of treatment.

M. H. showed 5 per cent, 40 per cent and 20 per cent beta hemolytic streptococci in three pharyngeal cultures taken three weeks before, two weeks before and the morning before starting treatment. Seventeen days later the culture showed only normal flora, and so remained throughout the season of therapy.

TABLE 4.—*Occurrence of Major Rheumatic Episodes in the Prophylactically Treated and Control Groups of Patients*

Group	Person-Seasons	Major Episodes	
		Number	Percentage
Sulfanilamide	79	0	0
Control	150	15	10.0
Total	229	15	6.6

In the control group, 41 of 336 cultures taken during the four control seasons were positive, an incidence of 12.2 per cent or three times that observed in the treated group.[20] The positive cultures were distributed among 32 patients; there was no evidence that any of the patients were carriers. Only 2 patients had as many as three positive cultures; these were not obtained on consecutive visits nor was the streptococcus the predominating organism. The average proportion of beta hemolytic streptococci in the positive cultures on control patients was 21.2 per cent, over twice as great a concentration as in the positive cultures of treated patients.

Thus it appears that during the eight month treatment and control periods, pharyngeal cultures positive for beta streptococci were more numerous and more strongly positive among control patients than among treated patients. Did this difference result from the presence or absence of prophylactic treatment or from inherent differences in the two groups of patients? Relatively few cultures were taken during the four "summer" months, and this particularly applies to the control group. However, the fact that of seventy-nine such "summer" and pretreatment cultures taken on patients treated during the "winter" months in 1938-1939 and 1939-1940, fourteen, or 17.7 per cent, were positive strongly suggests that the treated group was at least ordinarily susceptible to harboring the beta hemolytic streptococcus.

Major Rheumatic Episodes.—During the four years of this study, not a single major attack of acute rheumatic fever occurred in any patient while taking sulfanilamide as a prophylactic (table 4). Fifteen major rheumatic episodes were observed among the control cases during the same period, and one such episode occurred during August in a patient who had received prophylactic sulfanilamide the preceding season.[21] In all, 55 patients received prophylactic doses of sulfanilamide during seventy-nine seasons (charts 1 and 2[22]) while 67 patients were observed as controls during one hundred and fifty seasons[23] (charts 1, 2, 3 and 4).

TABLE 5.—*Distribution of Major Rheumatic Episodes Between Two Subdivisions of Control Group*

	Person-Seasons	Major Episodes	
		Number	Percentage
A. Had sulfanilamide other seasons	84.5	8	9.4
B. Never had sulfanilamide	65.5	7	10.7
Total control group	150	15	10.0

Of the control group, 35 patients never underwent a season of prophylactic treatment (charts 3 and 4); eight major episodes occurred among these patients. The remaining 32 had at some time taken sulfanilamide for one or more seasons and then were shifted to the control group (charts 1 and 2); seven major episodes occurred among control patients of this type (table 5). It is thus apparent that a course of prophylactic treatment has no statistically demonstrable effect on the subsequent appearance of attacks of acute rheumatic fever after sulfanilamide has been withdrawn.

Among the control group, then, fifteen major episodes occurred during a total of one hundred and fifty person-

20. This does not include positive cultures encountered during hospitalization for major and questionable episodes.

21. A "season" indicates the eight month period of prophylactic therapy.

22. A major rheumatic episode occurring during the treatment seasons would have been represented by a black block superimposed on a cross-hatched area. Since no such episodes occurred, this arrangement of symbols does not appear in charts 1 or 2.

23. In 4 cases of death during control seasons, the duration of such seasons was counted as half the normal season for statistical purposes.

seasons, an incidence of one major attack per ten person-seasons. If a similar rate of attack were present among the treated group, eight major episodes among seventy-nine person-seasons would be the normal expectancy. Yet there were actually no attacks among the treated group. The likelihood that this was the result of chance is calculated as $P = 0.003$; in other words, a difference as great as or greater than that observed would have arisen by chance only three times in a thousand assuming that the treated and control patients are comparable groups.[24]

(May and June). The June attacks occurred early in the month and in two instances at least were preceded by beta hemolytic streptococcus throat infections toward the end of May. C. A. had two attacks in one year, with nearly a three month period of well-being between attacks; L. F. was hospitalized twice in 1939-1940 with a month intervening between hospital admissions, but he was never well, so that this whole period is considered as one major rheumatic episode.

On inspecting charts 1, 2, 3 and 4, one will note that the high incidence of major episodes just before inclu-

TABLE 6.—*Analysis of Individual Major Rheumatic Episodes Occurring in Control Patients*

Name, Sex	Race, Age at Entering Study	Chart Number	Sulfanilamide History: Sulfanilamide Seasons	Sulfanilamide History: Control Seasons *	Social, Economic and Personality Factors †: Nutrition	Social, Economic and Personality Factors †: Housing	Social, Economic and Personality Factors †: Intelligence	Social, Economic and Personality Factors †: Cooperation	Cardiac Status ‡: Valvular Disease	Cardiac Status ‡: Cardiac Enlargement	Cardiac Status ‡: Functional Capacity	Nature of Major Rheumatic Episode §	Duration and Hospitalization
C. A. ♀	N 31	3	Never	**1, 2, 3, 4**	2	3	3	2	+	+	I	1. Polyarthritis, endocarditis, first degree heart block 2. Polyarthritis	Dec. 1936–Feb. 1937, J. H. H. ward May–Aug. 1937 in bed at home under C. C. supervision
S. B. ♂	W 15	3	Never	**1, 2, 3, 4**	2	3	2	3	+	—	I	Polyarthritis, precordial pain.....	Feb.–April 1937 J. H. H. ward
G. D. ♀	N 36	1	**1, 2**	**3, 4**	2	3	3	1	+	—	I	Polyarthritis, precordial pain, dyspnea, fever, tachycardia; throat culture 11/10/39: 25% beta hem. strep.	Oct.–Dec. 1939 in bed at home under C. C. supervision
R. E. ♂	W 14	1	**1, 2**	**3, 4**	1	1	1	1	—	—	I	Polyarthritis and pulmonary infiltration beginning 6/8/39, 15 days after U. R. I.; throat culture: 6/26/39: 40% beta hem. strep; E. S. R. elevated 8 weeks	June–Aug. 1939 in bed at home under C. C. supervision
R. F. ♂	N 14	1	**1**	**2, 3, 4**	2	2	2	2	+	+	I	Polyarthritis, fever and first degree heart block; E. S. R. still 32 mm. on 7/29/40	June–July 1940 in bed at home under C. C. supervision
L. F. ♂	N 21	1	**1**	**2, 3, 4**	2	2	2	2	+	+	II	Polyarthritis, carditis, fever, severe epistaxis	Nov.–Dec. 1939, Jan.–April 1940 J. H. H. ward
C. H. ♂	N 32	3	Never	**2, 3, 4**	1	3	3	3	?	—	I	Polyarthritis following U. R. I. with sore throat and cough	Jan.–March 1939 J. H. H. ward
N. H. ♀	N 35	1	**2**	**3, 4**	2	1	1	1	?	?	?	Polyarthritis and fever preceded by period of extreme weakness and lassitude; E. S. R. elevated 8 weeks	May–July 1940 in bed at home under L. M. D. and C. C. supervision
A. K. ♂	W 13	4	Never	**3, 4**	2	2	2	2	+	—	I	Polyarthritis, carditis, ? pericarditis; throat culture 1/15/40: 75% beta hem. strep.; E. S. R. normal; 2/1/40 sore throat; 2/4/40 polyarthritis	Feb.–April 1940 J. H. H. ward
L. K. ♂	W 16	4	Never	**3, 4**	1	2	2	3	+	—	I	"Acute rheumatic fever, carditis, mild polyarthritis"; report from Walter Reed General Hospital	Jan.–March 1940 in Walter Reed General Hospital, Washington, D. C.
P. L. ♂	W 28	3	Never	**2, 3, 4**	2	2	1	2	+	+	I	Polyarthritis, endocarditis, ? pericarditis	Dec.–Jan. 1938 J. H. H. ward
M. R. ♀	W 14	3	Never	**2, 3, 4**	2	3	2	2	—	—	I	Hemichorea	April–June 1938 in bed at home under spervision of Sinai Hospital
J. S. ♂	N 16	2	3	**4**	2	3	3	1	+	+	I	Acute rheumatic fever with pericarditis, myocarditis, pleurisy, ? bronchopneumonia and bronchitis	June–Aug. 1940 J. H. H. ward
M. T. ♀	W 36	1	**1**	**2, 3, 4**	1	1	2	1	+	+	II	Polyarthritis and ? erythema nodosum following severe ulcerative pharyngitis (throat culture not obtained); 2 weeks later throat culture showed 5% beta hem. strep.	Feb.–March 1940 in bed at home; C. C. supervision in latter weeks

* Control seasons: 1 = 1936-1937; 2 = 1937-1938; 3 = 1938-1939; 4 = 1939-1940. Numbers in heavy type indicate the season in which the major rheumatic episode occurred.
† Social, economic and personality factors are designated 1, 2 and 3 to indicate good, fair and poor.
‡ Cardiac status is designated +, ?, —, to indicate present, borderline and absent. I, II as in table 1.
§ E. S. R. = erythrocyte sedimentation rate; J. H. H. = Johns Hopkins Hospital; C. C. = Cardiac Clinic; U. R. I. = infection of upper part of respiratory tract.

The details of the fifteen major attacks occurring in the control group are analyzed in table 6, and a summary of the group suffering from recrudescences compared with the treated and control groups is given in table 1. The rate of attacks was highest in 1936-1937, lower in 1937-1938 and 1938-1939 and again high in 1939-1940. The apparent preponderance of attacks in 1940 depended on, first, the high attack rate and, second, the fact that the size of the control group was greater than in any preceding year. Most of the attacks occurred either in early winter (December to February) or late spring

sion of patients in the study is striking and is, of course, due to the fact that patients were selected because they had recently had attacks. The first season such attacks had occurred within three years of admission to the study; thereafter most of the available new patients had had acute rheumatic fever in the hospital within the preceding year. The fact that major attacks seemed more prevalent in both treated and control patients before entering the study than after may be accounted for on three grounds: first, that the patients were selected in such a way that all had had attacks just prior to inclusion in the study; second, that the chances of recurrences diminish with age and with the number

24. Dr. Edwin L. Crosby gave assistance and advice in matters pertaining to biostatistics.

of recurrences; and finally, that while all of the recent major attacks occurring just before and during the study were observed in the hospital, as well as some of the early episodes, other early major episodes recorded in the figures are based on the history as given by the patient, affording some chance for inaccuracy. All these considerations apply equally to treated and

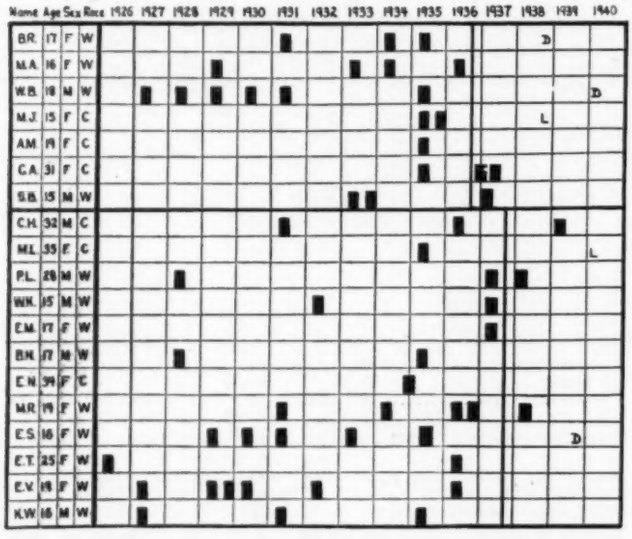

Chart 3.—Major episodes of acute rheumatic fever in control patients who entered the study in 1936 and 1937. The symbols are as given in chart 1.

control patients, and great care was taken to include patients with history of both many and few attacks in both groups.

Minor Rheumatic Episodes.—During the four seasons of observation, only two minor rheumatic episodes occurred among the treated group. Both attacks occurred soon after treatment was begun; 1 patient, F. R., was receiving only one fourth the final daily routine dose.

F. R. was started on 0.3 Gm. of sulfanilamide daily the first season. At the end of a week acute rhinitis without sore throat developed in him, and a week later one knee was painful and swollen for three days, with elevation of the sedimentation rate. The dose of sulfanilamide was subsequently raised.

M. W. began to take 1.2 Gm. of sulfanilamide daily in October 1937. Five days later he had malaise and painful hot wrists. The following day these symptoms had disappeared, but two days later his ankles were painful for a few hours. None of the joints were swollen, and he had no further symptoms.

Among the control patients, six minor recrudescences were noted:

P. L. had pains in his finger joints one day after extraction of an abscessed tooth, and six days later his knees and one wrist were swollen and sore and his sedimentation rate became elevated. He had not been treated with sulfanilamide prophylactically in the cardiac clinic, but he was given 2.4 Gm. of the drug daily for three days by another physician at the time of the dental extraction, beginning the day before the extraction was performed, and received half that dose for two more days.

E. M. had been hospitalized with acute rheumatic polyarthritis and myocarditis and erythema multiforme from January to April 1937. In March 1938 the cutaneous eruption recurred even more severely, continuing until July, associated with polyarthralgia and occasional precordial pain. During June the patient was in bed several days with fever and sore throat.

C. A. had joint pains with elevated sedimentation rate and changing electrocardiograms throughout the winter of 1938-1939.

L. F. had sore throat, cough, low grade fever and mild polyarthritis during April and May 1939, with a sedimentation rate of 30 to 33 mm.

W. K. had polyarthritis in May 1939, following an infection of the upper part of the respiratory tract, with night sweats, malaise and considerable pain and redness of the joints. He went to bed at home for six days. His sedimentation rate, usually normal, remained between 36 and 28 mm. for two months.

J. S., two weeks after one "chest cold" and three or four days after beginning another, had polyarthritis the first week of October 1938, with migratory joint pains and swelling of one knee. The sedimentation rate was 34 mm.

The cases of F. R., M. W. and P. L. suggest that sulfanilamide has little or no prophylactic value if administration is begun two weeks or less before the onset of a rheumatic episode.

Questionable Rheumatic Episodes.—None of the patients receiving sulfanilamide therapy had any febrile or incapacitating illness in which the diagnosis of rheumatic fever was brought into question. (Four patients had clinically typical influenza with leukopenia.) Among the control patients, 5 had illnesses requiring hospitalization in which a relationship to acute rheumatic fever was possible but not certain.

J. S., who has mitral stenosis, was hospitalized in October 1937 with bronchopneumonia. Culture of the sputum showed a small percentage of pneumococcus type IX; beta hemolytic streptococci were not recovered. There were no other signs of rheumatic activity. In 1934 he had had a similar attack with beta hemolytic streptococci present in the pharyngeal culture.

C. A., who had mitral stenosis and first degree heart block, had two attacks of polyarthritis in the spring of 1937. In the spring of 1938 she complained of feverishness, weakness and joint pains. In May 1938 she was hospitalized with fever, arthritis, erysipeloid swelling of the legs, several subcutaneous nodules, tender swelling of a synovial bursa on the back of her hand and a fine papular rash. Sedimentation rate was 32 mm.; culture of material from the throat showed 10 per cent beta hemolytic streptococci. The blood Wassermann reaction, which had been negative the year before, was positive. She received

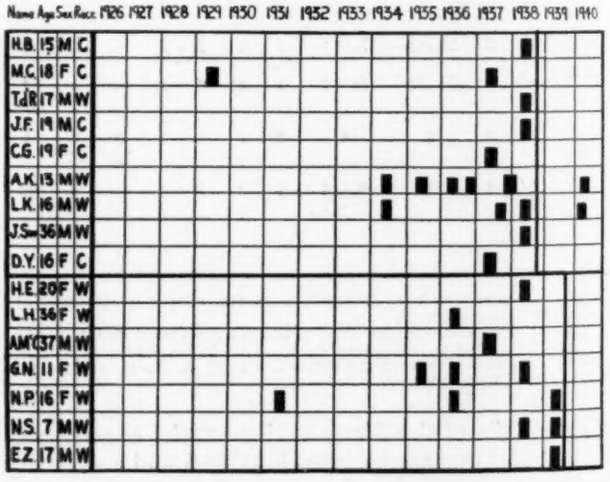

Chart 4.—Major episodes of acute rheumatic fever in control patients who entered the study in 1938 and 1939. The symbols are as given in chart 1.

antisyphilitic treatment and also large doses of salicylates. It was never fully determined whether this attack represented secondary syphilis alone, or rheumatic fever or both.

L. F., who had mitral insufficiency and stenosis and aortic insufficiency, began to have sharp abdominal pain, substernal and precordial pain with some dyspnea early in December 1937. In January 1938 he was admitted to another hospital, with totally irregular cardiac rhythm at a rate of 140, slight orthopnea but no other signs of congestive failure. This was the patient's

first attack of auricular fibrillation. Reversion to normal sinus rhythm with first degree heart block followed a course of digitalis and quinidine.

M. T. was in the Johns Hopkins Hospital for three weeks in November 1938 with lobular pneumonia associated with joint pains and a subcutaneous nodule. No pathogenic organisms were cultured from her sputum.

R. d'A., a white woman of 26 years, who had mitral insufficiency and stenosis, aortic insufficiency and cardiac enlargement, had a hysterectomy in November 1939 to interrupt a pregnancy. Nine days postoperatively fever developed and pain in the lower part of the abdomen, followed by tenderness along the course of the right femoral vein and pain in the axilla on respiration with nonproductive cough. She had signs of consolidation over the lower portion of the left side of the chest, with temperature increasing up to 103.5 F. The diagnosis was thrombophlebitis and pulmonary infarction. By December 11 the symptoms and signs had disappeared, and her temperature had returned to normal. At the height of her fever transient second degree heart block developed in her, and subsequently, prolongation of the auriculoventricular conduction time which persisted for over a month. The T waves remained upright throughout. She had had digitalis at the time of the second degree heart block, but it is doubtful whether she was overdigitalized, especially as her PR interval was still 0.24 on December 27, twenty-four days after stopping digitalis. Similar prolongation of the PR interval occurred during her last attack of acute rheumatic fever in 1936, when she had had no digitalis. Finally, on another occasion when the digitalis dosage was pushed, characteristic T wave changes developed without lengthening of the PR interval.

Other questionable episodes which did not involve hospitalization occurring among control patients were as follows:

E. V. had pain and swelling of the fingers for a few days in the spring of 1939. She was out of town at the time.

M. R., who did not come into the cardiac clinic in 1939-1940, wrote in answer to a follow-up letter, "I had rheumatic fever in December (1939)" but did not describe the attack.

L. J. had bouts of multiple joint pains from October 1939 to April 1940. She was later found to have pyelitis.

R. E. had pain in his right wrist three weeks after the onset of a febrile infection of the upper part of the respiratory tract with a productive cough. The sedimentation rate was 29 mm. three days after the onset of pain.

At each visit patients were specifically questioned concerning the occurrence of epistaxis, joint pains, sore throat, rash, nausea, vomiting, precordial pain, choreiform movements or other rheumatic symptoms. Among the treated group most of the patients were symptom free throughout the period of therapy. A few each winter complained of mild arthralgia, often in a single joint, without local heat, tenderness or swelling, and in the course of an ordinary cold there might be some soreness of the throat for a day or two. Occasional precordial pain and isolated epistaxis were also noted. No chorea or significant nausea and vomiting were recorded. The only patient who had a cutaneous rash of probable rheumatic origin during sulfanilamide therapy had had the eruption much more markedly before the drug was started:

E. B. had had attacks of erythema multiforme almost every evening for several months while in the hospital during his last acute attack of rheumatic fever, characterized by annular lesions which appeared and faded within a few hours. The lesions had been present frequently during the six weeks between discharge from the hospital and starting sulfanilamide therapy. The lesions recurred but twice, two and a half weeks and four months after beginning the drug, in 1938-1939, once during the summer of 1939 when he was not treated, and twice during the treatment season of 1939-1940. Each recurrence was for a few hours only.

Since the control patients were not all seen as frequently as the treated patients, isolated symptoms were not always recorded as accurately in the control group, but it was our impression that sore throats and epistaxes were more frequent and more severe among the untreated persons.

Prognosis; Deaths.—On entering the study, 4 patients had definite impairment of cardiac functional capacity necessitating some limitation of activity.[25] Of these, 2 (L. M. and L. E.) have been receiving sulfanilamide for four and three seasons respectively. The other 2 (L. F., M. T.) were given the drug in 1936-1937 and have been in the control group during the subsequent three seasons. Both of the latter patients have had acute recrudescences of rheumatic fever while in the control group, and L. F. has died of acute rheumatic fever. L. M. and L. E., on the other hand, have had no renewal of rheumatic activity clinically and have shown little or no further impairment of the functional capacity of the heart.

In 2 patients in the control group (B. R. and E. S.) subacute bacterial endocarditis developed, for which they were hospitalized, 1 in this hospital and 1 in the Baltimore City Hospital, with subsequent death and autopsy in both instances. Neither of these patients had ever received prophylatic sulfanilamide. In no patient receiving the drug did subacute bacterial endocarditis develop.

Finally, there were four deaths among patients in the control group, one from acute rheumatic fever and two from subacute bacterial endocarditis, as previously mentioned, and one from an acute illness of uncertain nature (L. F., B. R., E. S., W. B.). There were no deaths among patients in the sulfanilamide group while taking the drug.

COMMENT

The findings in this four year study confirm those reported in January 1939. It is striking that, while major rheumatic recrudescences occurred in 10 per cent of the one hundred and fifty person-seasons observed in the control group, no major episodes occurred during the seventy-nine person-seasons in the treated group. Every effort was made to evaluate the various factors affecting the treated group and control group; these have been set forth in detail in table 1. The treated group contained a slightly higher percentage of patients with organic and functional cardiac disability. In the control series there were more uncooperative patients, but only three major attacks developed among them, which is a smaller percentage than occurred among the cooperative control patients. The factors of nutrition, housing and intelligence were not significantly different in the two groups.

Beta hemolytic streptococci were found in 12.2 per cent of the three hundred and thirty-six pharyngeal cultures obtained from control patients during the months of October through June. It is interesting to compare this finding with two recent studies on the prevalence of beta hemolytic streptococci in cultures of material from the throat of normal persons living in Baltimore. Bourn, Carpenter and McComb[26] reported 10.4 per cent positive cultures among 2,812 taken between October and July over a three year period; most of their subjects were medical students;

25. Class II, classification of the New York Heart Association, 1939.

26. Bourn, J. M.; Carpenter, H. M., and McComb, E.: Streptococcus Haemolyticus (Beta) in the Presence and Absence of Acute Minor Respiratory Infection, 1928-1931, Am. J. Hyg. **17**: 761 (May) 1933.

some were dispensary patients. Long and Bliss [27] found 10 per cent and 13 per cent of pharyngeal cultures positive for ordinary beta hemolytic streptococci in two smaller groups of normal persons during the winter season. Thus the incidence of positive cultures in normal persons living in Baltimore is almost identical with that found in our control group. Since this is true, the fact that only 4 per cent of the five hundred cultures taken on our treated group of patients were positive gains increased significance. Sulfanilamide prophylaxis apparently caused a substantial reduction in the incidence of the beta hemolytic streptococcus in throat cultures of persons under treatment.

Of considerable interest is the fact that four deaths occurred among the control patients and none among the treated patients, although the latter had equally serious cardiac lesions. Also the fact that 2 of the 4 patients died of subacute bacterial endocarditis, while in no patients under treatment did this serious malady develop, brings up the question of whether sulfanilamide may prevent this complication as well. Our series is too small to bring any statistical evidence to bear on these points.

Since children often have a more fulminating variety of rheumatic fever than adolescents and young adults, and since most cardiac lesions begin in childhood, it seems logical that the sooner prophylactic treatment can be begun the better the results will be. As our study included very few children, we must await other studies to ascertain whether this assumption is correct. The results reported in the preliminary work of Coburn and Moore on children between the ages of 6 and 14 are as good as those of ours in persons of 14 years and over.

SUMMARY AND CONCLUSION

1. Sulfanilamide was given continuously to 55 patients with a recent history of acute rheumatic fever during seventy-nine person-seasons between 1936 and 1940. Sixty-seven patients with similar history, who were given no prophylactic treatment, were observed simultaneously during 150 person-seasons.

2. The drug was taken from November through June, usually in a dose of 1.2 Gm. daily.

3. No serious toxic effects were observed. Mild cutaneous eruptions and some drop in total white blood cell count without granulocytopenia occurred in a few patients. The leukopenia was self limited in duration and was of no apparent clinical significance.

4. Pharyngeal cultures positive for the beta hemolytic streptococcus were less numerous and showed a lower percentage of the organisms among treated patients than among control patients.

5. While taking sulfanilamide, none of the patients had a major attack of acute rheumatic fever or an acute beta hemolytic streptococcus infection.

6. Fifteen major attacks of acute rheumatic fever developed among patients not taking sulfanilamide during the control period. One patient, treated during the winter months, had an acute rheumatic recrudescence in August when he was not taking the drug. Five control patients suffered from acute illnesses which might have been of rheumatic character. One control patient was hospitalized with an acute beta hemolytic streptococcus infection.

7. Subacute bacterial endocarditis developed in 2 control patients.

8. Four deaths occurred among the control group, one from acute rheumatic fever and two from subacute bacterial endocarditis. The cause of death in the other case is uncertain. There were no deaths among persons in the treated group.

Sulfanilamide [28] may safely be administered in small daily doses over a long period of time. It appears to be of value in preventing recrudescences of acute rheumatic fever.

27. Long, P. H., and Bliss, Eleanor A.: Studies upon Minute Hemolytic Streptococci: IV. Further Observations upon the Distribution of Ordinary and Minute Beta Hemolytic Streptococci in Normal and Diseased Human Beings, J. Infect. Dis. **62**: 52 (Jan.-Feb.) 1938.

28. The sulfanilamide used in these investigations was supplied by the Winthrop Chemical Company, Inc., New York.

THE TREATMENT OF CONGESTIVE FAILURE IN CHILDREN WITH ACTIVE RHEUMATIC FEVER

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AND
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During the past three years we have studied the effects of various drugs on the heart and circulation of forty-four children with congestive failure during active rheumatic fever.[1] It is our purpose in this report to call attention to the aspects of the therapy of congestive heart failure peculiar to children suffering from this disease.

METHODS OF STUDY

More than 200 patients, mostly children, with congestive failure have been given prolonged care at the House of the Good Samaritan from 1920 to 1940. In a series of 44 consecutive patients with heart failure, all of whom were between 3 and 15 years of age, we were able to compare the influence of certain drugs on the failing heart. The effectiveness of a drug was determined by increase in urinary output, lowering of the venous pressure, decrease in the size of the liver and loss of body weight. The usual conditions of absolute bed rest and restriction of fluids (1,200 cc. or less per day, varying with the size of the patient) were enforced throughout the period of heart failure. No salt was added to the diet except that used in cooking. Intake and output of fluids were measured.

CLINICAL OBSERVATIONS

Xanthine Derivatives.—Because of the ease of administration, low cost and good results obtained the drugs of the xanthine group are of much value in the treatment of children with rheumatic fever, in particular theocalcin (theobromine calcium-salicylate) and theosodate (theobromine sodium-acetate). We have used theobromine calcium salicylate in twenty-three cases, with a satisfactory response in 13, or 65 per cent. It is in our experience the best tolerated of all members of this group, rarely causing any gastrointestinal upset. The optimal daily dose has been 3 to 5 Gm. (an average of 3 Gm.) divided into three doses. We have used it as long as it was effective, in some cases daily for a period of three to four months. Theobromine sodium-acetate has been used in eleven cases, with an excellent effect in 9, or 82 per cent. The higher incidence of benefit from the use of this drug as compared to theobromine calcium-salicylate does not necessarily indicate that theobromine

From the House of the Good Samaritan, Boston.

1. Walsh, B. J., and Sprague, H. B.: The Character of Congestive Failure in Children with Active Rheumatic Fever, Am. J. Dis. Child., to be published.

sodium-acetate is more efficient in view of the smaller number of cases and the known variability of rheumatic fever. It is well tolerated and without any evident disadvantage when given in the dose of 3 to 5 Gm. daily in divided doses.

Diuretin (theobromine sodium-salicylate) is less effective than the previously mentioned xanthine derivatives, since it frequently causes vomiting when given by mouth. However, when it is impossible to give a diuretic orally, theobromine sodium-salicylate is often effective when administered rectally in doses of 1 to 2 Gm. in tap water three or four times daily.

We have had no success with plain theobromine in the few cases in which we have tried it, chiefly because of nausea and vomiting.

Mercurial Diuretics.—It has been necessary to use salyrgan or mercupurin because of otherwise uncontrollable congestive failure in 27, or 61 per cent, of our patients. Satisfactory diuresis resulted in more than 90 per cent of instances in which these drugs were used when given in the dose of 1 cc. intravenously. In an occasional instance it was necessary to resort to one of these diuretics once or twice a week for several weeks until the patient either improved and was maintained on a xanthine drug or grew worse and died. It was frequently necessary in order to get a good result to precede the mercurial diuretic by 3 to 4 Gm. of ammonium chloride in the previous twenty-four hours. In the treatment of small children 0.5 cc. of mercupurin or salyrgan is sufficient to cause a satisfactory urinary output. We have not had any toxic reactions from these drugs. However, it is unwise to give a mercurial diuretic in the presence of full digitalization, since the mobilization of the edema fluid consequent to the use of the mercurial may lead to intoxication with digitalis. We would advise the omission of digitalis for as long as possible before the administration of mercupurin or salyrgan. Mercupurin in suppositories was satisfactory in seven instances but proved ineffective on three other occasions, possibly because of failure to retain the suppository for a sufficient period. There was mild rectal irritation in 2 patients but no other untoward effects.

Digitalis.—The use of this drug in the treatment of children with rheumatic heart disease and congestive failure has been the subject of considerable controversy. Some authors (Jacobsen and Davison,[2] Bachmann,[3] and Sutton and Wyckoff [4]) have maintained that it is of benefit, while others (Schwartz and Schwedel [5] and Schwartz and Levy [6]) have concluded that digitalis is not of value in the treatment of heart failure in children.

We have witnessed marked improvement as evidenced by diuresis, loss of edema, decrease in the size of the liver and lowering of the venous pressure in 15 (43 per cent) of the 35 cases in which digitalis was used. We are convinced that digitalis has a definite place in the therapy of heart failure in children although it must be given with greater caution to children than to adults. The lack of response in the majority (20, or 57 per cent) cannot be accounted for readily, except in a few patients with overwhelming rheumatic infection, since the two groups were comparable in the duration and severity of rheumatic fever and rheumatic heart disease.

It is of considerable interest that the maximum effect was obtained in our patients by doses of digitalis equal to the amount required by adults as calculated by Eggleston's method (1 cat unit, or 1½ grains [0.1 Gm.], of digitalis U. S. P. per 10 pounds [4.5 Kg.] of body weight). This is contrary to the widely held opinion fostered first by McCulloch and Rupe [7] and later by Jacobsen and Davison [2] that the effective dose of digitalis in children is 50 per cent to 200 per cent more per unit of body weight than is needed in adults. We have found it not only unnecessary but possibly dangerous to exceed the estimated therapeutic dose of digitalis as determined by Eggleston's rule,[8] since there seems to be an increased tendency for children with active rheumatic fever to suffer serious cardiac disturbances while under digitalis therapy. It was the appearance of auricular fibrillation in 6 of our patients who were taking digitalis and the return of normal rhythm in 5 of them when the drug was omitted that first impressed us with the unusual responses to digitalis which may occur. In the sixth patient, a 10 year old girl with disease of the mitral valve of six years' duration, the arrhythmia continued until death two weeks after the digitalis was stopped.

Two patients who had tolerated a daily maintenance dose of 1½ grains of digitalis for two weeks had a flare-up of rheumatic fever which coincided with the appearance of auricular fibrillation. In a third patient, who was also receiving a daily dose of 1½ grains of digitalis, auricular fibrillation developed the day after a considerable diuresis from intravenous injections of salyrgan. The fact that auricular fibrillation became manifest in 2 patients at a time when only the estimated therapeutic dose had been reached and in 1 other when the calculated dose was exceeded seems to us to indicate the wisdom of avoiding large amounts of digitalis in children.

Sudden death occurred in 3 patients showing toxic effects from digitalis other than auricular fibrillation (bigeminal rhythm due to ventricular premature beats in 2 patients, and two to one heart block in the third). Another patient, in whom auricular fibrillation had been present within five days of death, died unexpectedly. These experiences have further strengthened our belief that some children with severe rheumatic fever and rheumatic heart disease manifest a peculiar sensitivity to digitalis. While sudden death is not rare in patients suffering from rheumatic heart disease and congestive failure, it generally occurs in those patients who have failed to show improvement or who are growing worse despite all treatment.

In the children whose congestive failure has improved under treatment but who have, as well, signs of intoxication with digitalis, as in the 4 cases just described, one cannot escape the impression that the action of digitalis rather than the rheumatic fever may have been the major factor in the sudden death. Schwartz [9] was so impressed by the appearance of auricular fibrillation as an early sign of digitalis toxicity in children with rheumatic heart disease and congestive failure, and by

2. Jacobsen, A. W., and Davison, W. C.: Digitalis Therapy in Cardiac Decompensation in Children, Am. J. Dis. Child. **32**: 373 (Sept.) 1926.

3. Bachmann, H. A.: Clinical Types of Edema in the Heart Failure of Children, Arch. Int. Med. **43**: 795 (June) 1929.

4. Sutton, L. P., and Wyckoff, John: Digitalis: Its Value in the Treatment of Children with Rheumatic Heart Disease, Am. J. Dis. Child. **41**: 801 (April) 1931.

5. Schwartz, S. P., and Schwedel, J. B.: Digitalis Studies in Children with Heart Disease, Am. J. Dis. Child. **39**: 298 (Feb.) 1930.

6. Schwartz, S. P., and Levy, Joseph: Digitalis Studies on Children with Heart Disease, Effects of Digitalis in Children with Rheumatic Fever and Rheumatic Heart Disease, Am. J. Dis. Child. **42**: 1349 (Dec.) 1931.

7. McCulloch, H., and Rupe, W. A.: Studies on the Dosage of Digitalis in Children, Am. J. M. Sc. **162**: 231 (Aug.) 1921; The Tolerance of Children for Digitalis, South. M. J. **15**: 381 (May) 1922.

8. Eggleston, Cary: Digitalis Dosage, Arch. Int. Med. **16**: 1 (July) 1915.

9. Schwartz, S. P.: Digitalis Studies on Children with Heart Disease: Auricular Fibrillation in Children with an Early Toxic Digitalis Manifestation, Am. J. Dis. Child. **39**: 549 (March) 1930.

the death of 1 patient so affected, that he concluded digitalis was actually contraindicated in the treatment of children with rheumatic fever, active carditis and myocardial insufficiency. Our experience indicates that when its dosage is carefully controlled digitalis is useful in the treatment of children with rheumatic fever and congestive failure in spite of its potential dangers.

Dosage.—It is our practice to give 1½ grains of digitalis orally three or four times a day until the total dose as estimated by Eggleston's method is reached. We do not hesitate, although it is seldom indicated, to administer the full calculated amount of digitalis in two or three doses orally or parenterally over a period of eighteen to twenty-four hours. The effect of digitalis is then maintained by a daily dose equal to 1 or 1½ grains (0.06 or 0.1 Gm.); the smaller dose is adequate for children between 5 and 10 years of age.

Electrocardiograms should be taken at frequent intervals, at least every three days, until the full dose of digitalis is given, so that its effect, particularly on auriculo-ventricular conduction, may be observed. Disturbances of rhythm and high grade heart block may occur as a result of digitalis in the absence of anorexia, nausea and vomiting. We are so impressed with the need of electrocardiographic studies in children who are receiving digitalis that we would hesitate to use this drug if facilities for taking electrocardiograms at frequent intervals were not available.

COMMENT

Congestive failure in children with rheumatic heart disease seldom lasts less than a month and occasionally is evident for a year (average duration in our patients was three months). That it is of serious prognostic import is indicated by the death of 32 (73 per cent) of our patients, all of whom had congestive failure at the time of death. Seven (16 per cent) have recovered from congestive failure and rheumatic fever and are now well, and it is possible that the remaining 5 (11 per cent) still in the hospital with heart failure may likewise be restored to a relatively normal life. Though the clinical course is essentially dependent on the severity of the underlying rheumatic fever, the amount of heart failure can be controlled in a large measure by use of appropriate therapy. Diuretics of the xanthine group, particularly theobromine calcium-salicylate and theobromine sodium-acetate, are the first choice in carrying out this treatment. If they prove unsuccessful, digitalis may be tried, if one estimates the dose according to the body weight and bears in mind that children with rheumatic fever and congestive failure are especially prone to intoxication with digitalis. The mercurial diuretics are reserved for those in whom heart failure is increasing despite the use of a xanthine derivative or digitalis.

SUMMARY

1. Forty-four children with congestive failure during active rheumatic fever were given various drugs (theobromine calcium-salicylate, theobromine sodium-acetate, theobromine sodium-salicylate, mercupurin, salyrgan and digitalis) for their effect on the heart and circulation.

2. The xanthine diuretics were found to be of greatest value, in particular theobromine calcium-salicylate or theobromine sodium-acetate in the dose of 1 Gm. three times a day. Theobromine sodium-salicylate given by mouth was found less effective but was useful when given rectally.

3. Mercurial diuretics given intravenously are effective in producing diuresis but should not be given immediately after full digitalization because of the danger of inducing toxic digitalis reactions during the loss of fluid.

4. Digitalis proved to be of value, but it was found necessary to use great care in its administration.

CHRONIC ENDEMIC SELENIUM POISONING

A REVIEW OF THE MORE RECENT FIELD AND LABORATORY STUDIES

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In 1933 Robinson [1] demonstrated selenium in a sample of wheat which had been grown in southern South Dakota and which had previously been shown by Franke and his co-workers [2] to be toxic when fed to small animals. These contributions solved the problem of the etiology of the pathologic condition in farm animals known in some of the Great Plains states as "alkali disease" [3] and simultaneously opened up the larger and more difficult problem of selenium as a possible health hazard to man. The early investigations of Byers [4] indicating the natural occurrence of selenium in certain soils of some of the western states and its wide distribution in plants available to man as well as to the lower animals brought the problem to the attention of public health investigators. More recently selenium compounds have also come into use in insecticide sprays on the West Coast, and this has added to the hazard from the naturally occurring variety.[5] Moreover, Beath and his co-workers [6] have shown that inorganic selenium compounds, such as are used in insecticide sprays, may be absorbed by certain special plants which in turn may serve as converters into organic compounds more or less readily assimilable by plants used in animal and human nutrition. The extent of the health hazard from the increasing use of selenium in the industries has been discussed by Dudley.[7] Though chemically the selenium compounds constituting an industrial hazard are quite different from those occurring naturally in endemic areas, there is ample evidence to indicate that toxicologically they are at least qualitatively similar.[8]

THE ABSORPTION OF SELENIUM IN MAN IN ENDEMIC AREAS

Field investigations conducted in 1936 in three seleniferous areas of eastern Wyoming, southern South Dakota and northern Nebraska revealed a more or less universal absorption of selenium among the rural population in amounts sufficient to be excreted in the urine in concentrations varying from about 10 to 200 micro-

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From the Division of Pharmacology, National Institute of Health.

Read before the Section on Pharmacology and Therapeutics at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

1. Robinson, W. O.: J. A. Off. Agric. Chem. **16**: 423, 1933.
2. Franke, K. W.: J. Nutrition **8**: 609 (Nov.) 1934.
3. Schoenig, H. W.: North Am. Vet. **17**: 22, 1936.
4. Byers, H. G.: Selenium Occurrence in Certain Soils in the United States, Technical Bulletin 482, United States Department of Agriculture, August 1935.
5. Hoskins, W. M.; Boyce, A. M., and Laniman, J. F.: Hilgardia **12**: 115, 1938.
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7. Dudley, H. C.: Pub. Health Rep. **53**: 281 (Feb. 25) 1938.
8. Smith, M. I.; Stohlman, E. F., and Lillie, R. D.: J. Pharmacol. & Exper. Therap. **60**: 449 (Aug.) 1937. Smith, M. I., and Lillie, R. D.: Studies in Chronic Selenosis, Bulletin 174, National Institute of Health, Federal Security Agency, Public Health Service, 1940, pt. 1.

grams per hundred cubic centimeters.[9] It should be added that normally human urine in nonseleniferous areas contains no selenium. Investigations as to the probable sources revealed wide occurrence of the element in foodstuffs of animal origin such as milk, eggs and meats, as well as in vegetables and cereal grains.[10] Analysis of such foodstuffs from endemic areas is given in table 1. Drinking water usually contained none and in the few positive instances it did not exceed from 5 to 30 micrograms per hundred cubic centimeters.

Attempts to correlate clinical evidence of selenium intoxication with the degree of absorption as evidenced by urinary excretion did not yield definite results. Symptoms that might be considered pathognomonic of selenium poisoning could not be discovered. The incidence of vague symptoms of ill health, particularly those suggestive of gastric and hepatic disorders, appeared to be sufficiently high to indicate the probability of cause and effect.[10] Urinary analysis in a series of farm animals with frank symptoms of "alkali disease" showed a selenium content varying from 61 to 300 micrograms per hundred cubic centimeters,[11] values well within the limits of those found in human beings from the same or similarly affected areas. Our problem, therefore, resolved itself into ascertaining, first, the relation of excreted selenium to that absorbed and, second, determining the limits of tolerance in experimental animals so that we might arrive at some conclusion as to the probable margin of safety in man and the probable effects that may be expected in case this is exceeded.

RELATION OF EXCRETED AND RETAINED SELENIUM TO THE AMOUNT INGESTED

As stated earlier, the field studies had indicated that man living in selenium-endemic areas may excrete more or less continuously as much as 200 micrograms of selenium per hundred cubic centimeters of urine. The significance of this in terms of selenium absorption was not clear until it was shown by experiments on laboratory animals that the excretion level in the urine bore a definite relationship to the amount ingested. On a uniform daily intake of selenium fed as sodium selenite over a period of months it was found that a balance was soon struck so that from 50 to 80 per cent of the amount ingested was excreted in the urine with much smaller and relatively insignificant amounts being excreted in the feces.[12] The continual feeding of small

TABLE 1.—*Analysis of Selenium in Foodstuffs as Expressed in Micrograms per Hundred Grams of Material*

Foodstuff	Micrograms
Cereals	87 to 1,880
Vegetables	12 to 1,780
Milk	16 to 127
Eggs	25 to 914
Meats	117 to 800

daily doses of naturally occurring food selenium, as in wheat or oats, to suitable laboratory animals showed a similar relationship of output to intake, though here relatively less was excreted in the urine and more retained in the tissues.[13] Stated briefly, the selenium output in the urine expressed as micrograms per hundred cubic centimeters in animals fed seleniferous wheat protein was roughly equivalent to the daily dose administered reckoned as micrograms per kilogram of body weight. Only a minor part of that ingested, probably that failing of absorption, was found in the feces, but considerable amounts were found to be retained in the tissues. The liver, kidneys, spleen, pancreas, muscles, heart and lungs are the tissues storing the most, while bones, skin and brain store the least. Of considerable interest is its accumulation in the hair of animals chronically poisoned with naturally occurring food selenium. This is believed to be as good a criterion of the length of time an individual has been exposed to selenium and the extent of its storage in vital tissues and organs as the excretion level in the urine is an index of the daily absorption.[14]

TABLE 2.—*Incidence of Important Pathologic Manifestations*

Pathologic Manifestation	Per Cent
Gastric ulcers or necrosis	13
Evidence of injury to the gastric mucosa	74
Focal destruction of liver cells and fatty degeneration	60
Cirrhosis of the liver	20
Anemia	50
Serous effusions	27
Endocarditis or focal myocardial degeneration	50

On discontinuance of its administration in experimental animals the excretion level in the urine falls off rapidly in the case of inorganic compounds and more slowly when food selenium has been given, so that appreciable amounts may be found in the urine for as long as six months thereafter.[13] This is consistent with the tendency of this type of selenium to be stored in the tissues in firm combination with the proteins from which it is but slowly released. Its concentration in the blood, which is about half that of urinary selenium during active ingestion, may amount to twice that of urinary selenium from thirty to forty days after its administration has been discontinued.[14] The problem of its mobilization from the body depots awaits solution.

TOXICITY, CELLULAR CHANGES AND FUNCTIONAL DERANGEMENTS

The older literature on the pharmacology of selenium has been of little help in the present problem for it dealt mostly with the acute effects from toxic or lethal doses.[15] The question of the extent of the hazard to health from continued absorption of small subtoxic amounts from food sources is a difficult one to answer. The problem is rendered even more difficult by the fact that virtually nothing is known of the chemical nature of the compound or compounds naturally occurring in foodstuffs. Several investigators have studied the effects of the continual ingestion of inorganic or food selenium when fed at various levels.[16] These researches are generally in good agreement, indicating that 15 or more parts per million in the diet of the rat is toxic. At this level there is an estimated intake of about 1 to 1.5 mg. per

9. Smith, M. I.; Franke, K. W., and Westfall, B. B.: Pub. Health Rep. **51**: 1496, 1936. Smith and Westfall.[10]
10. Smith, M. I., and Westfall, B. B.: Pub. Health Rep. **52**: 1375 (Oct. 1) 1937.
11. Smith, Franke and Westfall.[9] Smith.[25]
12. Smith, M. I.; Westfall, B. B., and Stohlman, E. F.: Pub. Health Rep. **52**: 1171 (Aug. 27) 1937.
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kilogram per day, and with inorganic selenium as sodium selenite the incidence of important pathologic manifestations given in table 2 was found.[8]

The continued ingestion of naturally occurring wheat selenium in rats at a level of from 10 to 15 parts per million with an estimated daily intake of from 1 to 1.5 mg. per kilogram showed liver injury, effusions and anemia as the most prominent pathologic manifestations.[17] Higher laboratory animals appear to be more susceptible to its toxic effects. With the foregoing data as a guide many experiments were conducted on cats and rabbits with graded doses of selenium as it occurs naturally in wheat or oats over a period of many months, in order to ascertain the limits of tolerance and the character of untoward manifestations from doses exceeding the tolerated level. Gastric and hepatic functional tests, plasma bilirubin, urinary urobilinogen and hematologic studies were made from time to time in order to discover the earliest toxic manifestations. At the close of the experiment careful microscopic examinations were made of the tissues to correlate functional derangements with structural abnormalities.

TABLE 3.—*Effect of Proteins and Other Supplements on the Chronic Toxicity of Naturally Occurring Wheat Selenium*

Supplement	Number of Animals	Average Weight			Mortality, Per Cent	Incidence of Pathologic Involvement, Per Cent			
		Initial	Final			Liver Cirrhosis	Anemia	Effusions	No Lesions
			Males	Females					
None, basal diet	14	55	115	...	57	100	64	90	0
Casein 20%	16	53	276	150	0	6	0	0	94
Wheat gluten 25%	11	50	200	155	9	0	9	0	91
Dried brewers' yeast 36%	13	53	195	150	0	0	0	0	100
Lactalbumin 20%	10	55	225	148	0	0	0	0	100
Ovalbumin 20%	20	53	205	155	0	0	0	0	100
Gelatin 25%	14	57	205	135	7	7	0	0	92
Desiccated pork liver 20%	17	58	280	160	30	47	30	47	53
dl-Methionine 0.8%	11	54	90	...	55	73	45	55	23
d-Lysine 1.7%	5	48	85	...	100	100	100	80	0
Glucosamine 2%	21	53	127	95	33	60	41	30	38

The results of this investigation, which are described in detail elsewhere,[18] may be summed up as follows:

1. The susceptibility to small doses of selenium in the range of from 0.1 to 0.5 mg. per kilogram daily is quite variable. Much of this variability appears to be due to dietary factors, as will be pointed out presently. Naturally occurring wheat selenium appears somewhat less toxic than the inorganic selenite or selenate.

2. Doses in excess of 0.5 mg. per kilogram daily, which are reflected by an excretion level of 500 or more micrograms per hundred cubic centimeters in the urine, are likely to be toxic and damaging to the tissues. The pathologic effects are similar to those described for rats.

3. The smaller doses of 0.1 to 0.2 mg. per kilogram daily, reflected by an excretion level of about 100 to 200 micrograms per hundred cubic centimeters of urine, which may be tolerated for many months without untoward effects under favorable nutritional conditions, may nevertheless show evidence of hepatic dysfunction under less favorable nutritional conditions.

4. The chief symptoms of selenium intoxication in cats from the continued daily ingestion of the somewhat larger doses of from 0.3 to 0.5 mg. per kilogram are intermittent anorexia, occasional vomiting and a lowered functional efficiency of the liver. The latter is most readily demonstrable by abnormal retention of intravenously injected rose bengal, less readily by the abnormal retention of intravenously injected bilirubin or by the decreased ability to conjugate hippuric acid after the intravenous injection of sodium benzoate and is scarcely detectable by the bromsulphalein test. Abnormalities in bile pigment metabolism are usually absent. At necropsy the liver usually presents some degree of chronic interstitial hepatitis, and occasionally advanced portal cirrhosis.

5. The hematologic results with small doses may be negative or show only moderate reticulocytosis of about 5 to 10 per cent. This is most readily demonstrable in rabbits and rats and is usually a forerunner of the more definite manifestations of hypochromic microcytic anemia seen quite frequently in animals receiving larger doses.

It was pointed out earlier that in our field studies in selenium endemic areas a high incidence of symptoms suggestive of gastric disorders was encountered. We have also found a high incidence of damage to the gastric mucosa in our experimental animals, especially those receiving inorganic selenium. Moreover, some of the early investigations of Mead and Gies[19] and of Jones[20] indicated the possibility that selenium compounds might cause a serious reduction in free hydrochloric acid. Experiments on rats and cats receiving both inorganic as well as organic food selenium over periods ranging from ten to three hundred and fifteen days failed to reveal a marked or constant diminution of either free or total gastric acidity as compared with control animals.[21] Dilute alcohol intragastrically or histamine subcutaneously or both were used in these experiments after the usual fasting period of from eighteen to twenty-four hours. These experiments fail to indicate any diagnostic value in chronic selenosis from the usual type of gastric analysis.

THE TRANSMISSION OF SELENIUM THROUGH THE PLACENTA

Transmission of selenium through the placenta was demonstrated by experiments in rats and cats in chronic poisoning with both inorganic and organic food selenium.[22] More selenium was found in the tissues of the newborn when the mother's diet contained organic food selenium than when it contained sodium selenite. In rats fed seleniferous oats during the latter half of the gestation period the young, which at birth constituted approximately 28 per cent of the mother's weight, stored about 14 per cent of the mother's selenium intake.

In 1936 Franke and his co-workers demonstrated congenital malformations in chicks hatched from eggs

17. Smith and Lillie.[8] Smith.[35]

18. Smith, M. I.; Westfall, B. B., and Stohlman, E. F.: Studies in Chronic Selenosis, Bulletin 174, National Institute of Health, Federal Security Agency, Public Health Service, 1940, pt. 3. Smith and Lillie.[8]

19. Mead, L. D., and Gies, W. J.: Am. J. Physiol. **5**: 104, 1901.

20. Jones, C. V.: Biochem. J. **4**: 405, 1909.

21. Smith, M. I., and Stohlman, E. F.: Studies in Chronic Selenosis, Bulletin 174, National Institute of Health, Federal Security Agency, Public Health Service, 1940, pt. 2.

22. Westfall, B. B.; Stohlman, E. F., and Smith, M. I.: J. Pharmacol. & Exper. Therap. **64**: 55 (Sept.) 1938.

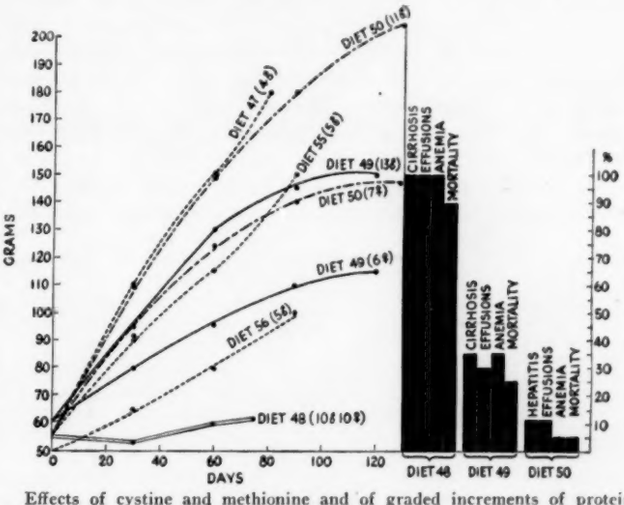
of selenized hens.[23] More recently Landauer [24] was able to show that chronic intoxication of laying hens with seleniferous wheat resulted in more extreme effects on the progeny of Creeper females than on that of their genetically normal sibs, thus indicating that Creeper mutation exaggerates the interference with normal development produced by selenium. In our experiments we have failed to observe any such congenital malformations or developmental anomalies in the mammalian fetus even under the most rigorous conditions of mating animals of both sexes reared on seleniferous diets from the time of weaning. Young born under such conditions with the mothers continuing to be maintained on the seleniferous diets are vastly more susceptible to its toxic effects compared with normal animals placed on similar seleniferous diets at weaning, but the pathologic manifestations are qualitatively the same.

THE EFFECTS OF SELENIUM ON RESPIRATORY AND OTHER ENZYMES

The injurious effect of selenium compounds on certain of the enzymes concerned with cellular respiration was indicated in the work of Collett,[25] Labes and Krebs,[26] Potter and Elvehjem [27] and Stotz and Hastings.[28] These investigations showed an inhibition of oxygen consumption by tissues in vitro under the influence of sodium selenite, apparently through the poisoning of succinic dehydrogenase. Wright,[29] working in this laboratory with sodium selenite and sodium selenate and various tissues, such as liver, kidney, brain and muscle, found an irreversible loss of ability to oxidize naturally occurring substrates after contact with the selenium compounds in sufficient concentration. Definite inhibition of oxygen consumption could be demonstrated with concentrations of the order prevailing in the intact animal receiving a minimal lethal dose of the substance. These experiments indicated no impairment of the cytochrome-indophenol-oxidase but a general poisoning of the dehydrogenating enzymes. Reduced glutathione, which according to Hopkins and Morgan [30] could reactivate succinic dehydrogenase previously inactivated by oxidized glutathione, could also protect tissues against selenite provided the glutathione had been added before marked loss of oxygen consumption took place. This suggests the possibility that the injurious effects of the selenium compounds are due to the removal of sulfhydryl groups essential for the oxidative mechanism. In work with other enzyme systems an inhibiting action of selenium on urease was observed [31] which, according to Sumner and Poland,[32] is dependent for its activity on the presence of sulfhydryl groups. No inhibiting effects have been found on choline esterase, catalase or liver arginase.[31] The last named is of particular interest, for this enzyme may be considered an index of protein metabolism.[33] Liver arginase was unaffected by inorganic selenium compounds in vitro and was apparently augmented in some instances after the ingestion of seleniferous wheat.[31] These results are consistent with the observation of Cathcart and Orr [34] of an increased urea and nitrogen output in the urine of dogs after the subcutaneous injection of sodium selenite and perhaps indicate a better utilization of the proteins in a compensatory manner when the carbohydrate metabolism is necessarily impaired as a result of interference with the dehydrogenation of intermediary carbohydrate metabolites.

THE INFLUENCE OF DIETARY PROTEIN ON THE CHRONIC TOXICITY OF SELENIUM

Last year experiments were reported indicating that dietary protein had a significant influence on the toxicity of naturally occurring wheat selenium in rats.[35] It was shown that 10 parts per million of wheat selenium fed in a diet containing 10 per cent protein was highly toxic and damaging to the tissues whereas the same amount of selenium fed in an isocaloric diet containing an additional 20 per cent protein in the form of casein scarcely produced any toxic effects. It appeared from those experiments that within certain limits the toxicity of food selenium is determined by the protein-selenium ratio in the diet rather than by the level of intake. The data available at that time indicated that a seleniferous diet with a protein-selenium ratio of 1 : 100 as expressed in terms of grams of protein to micrograms of selenium per hundred grams of diet is highly toxic, while a similar seleniferous diet with a protein-selenium ratio of 1 : 33 or better may be tolerated with relative impunity. Recently this has received confirmation in the experiments of Lewis, Schultz and Gortner [36] and of Gortner.[37] Moxon, it should be added,[38] had also previously reported suggestive though inconclusive experiments of a similar nature.



Effects of cystine and methionine and of graded increments of protein on the chronic toxicity of sodium selenite. Experiments 56, 55 and 47 represent average weight curves of groups of rats on control non-seleniferous low protein diet (7 per cent) alone and when supplemented with cystine or with cystine and methionine respectively. Experiments 48, 49 and 50 contained 15 parts per million of selenium as sodium selenite, the first containing 7 per cent protein supplemented with cystine and methionine to a level equivalent to that of 30 per cent casein, the second containing 13 per cent protein with cystine and methionine as in the preceding and the third containing 30 per cent protein with no additional cystine or methionine. The mortality and incidence of pathologic involvement for the three sets of experiments are shown to the right.

23. Franke, K. W., and Tully, W. C.: Poultry Sc. **18:** 273, 1936. Franke, K. W.; Moxon, A. L.; Poley, W. E., and Tully, W. C.: Anat. Rec. **65:** 15 (April 25) 1936.
24. Landauer, Walter: J. Exper. Zool. **83:** 431, 1940.
25. Collett, M. E.: J. Biol. Chem. **58:** 793 (Jan.) 1924.
26. Labes, R., and Krebs, H.: Fermentforsch. **14:** 430, 1935.
27. Potter, V. R., and Elvehjem, C. A.: Biochem. J. **30:** 189 (Feb.) 1936; J. Biol. Chem. **117:** 341 (Jan.) 1937.
28. Stotz, Elmer, and Hastings, A. B.: J. Biol. Chem. **118:** 479 (April) 1937.
29. Wright, C. I.: Pub. Health Rep. **53:** 1825 (Oct. 14) 1938.
30. Hopkins, F. G., and Morgan, E. J.: Biochem. J. **32:** 611 (March) 1938.
31. Wright, C. I.: J. Pharmacol. & Exper. Therap. **68:** 220 (Feb.) 1940.
32. Sumner, J. B., and Poland, L. O.: Proc. Soc. Exper. Biol. & Med. **30:** 553, 1933.
33. Lightbody, H. D.: J. Biol. Chem. **124:** 169 (June) 1938.
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35. Smith, M. I.: Pub. Health Rep. **54:** 1441 (Aug. 4) 1939.
36. Lewis, H. B.; Schultz, Julius, and Gortner, R. A., Jr.: J. Pharmacol. & Exper. Therap. **68:** 292 (Feb.) 1940.
37. Gortner, R. A. Jr., J. Nutrition **19:** 105 (Feb.) 1940.
38. Moxon, A. L.: Alkali Disease or Selenium Poisoning, Bulletin 311, South Dakota Agricultural Experiment Station, 1937.

We have now confirmed and extended those earlier observations to include several other proteins besides casein and to include data on the effects of protein and certain amino acids on the chronic toxicity of inorganic selenium.[39] These experiments are published elsewhere in detail and will be mentioned here only briefly. They have shown, as may be seen in table 3, that all the proteins examined—wheat protein, lactalbumin, ovalbumin, the proteins derived from brewers' yeast and from desiccated liver, and even the biologically inferior protein gelatin—afford protection against the toxic effects of wheat selenium. The amino acids lysine and methionine, both of which are relatively low in the wheat protein used at the 7 per cent level in the basal diet, have not shown any beneficial effect when used as supplements. Glucosamine, a substance which in some unpublished experiments has been found to anatagonize intravenously injected sodium selenite to some extent, appears to have afforded also a partial protection against the chronic toxic effects of wheat selenium.

The experiments with inorganic selenium when fed at a level of 15 parts per million as sodium selenite in diets with graded increments of the protein casein with or without cystine and methionine supplements are illustrated in the accompanying chart. The composition of the experimental diets is given in table 4. They show conclusively that the degree of protection is related

TABLE 4.—*Composition of Experimental Diets*

	Diet Number					
	56	55	47	48	49	50
Casein	4	4	4	4	10	27
Dried brewers' yeast	5	5	5	5	5	5
McCollum's salt mixture no. 185	4	4	4	4	4	4
l-Cystine	0	0.1	0.1	0.1	0.05	0
dl-Methionine	0	0	0.5	0.5	0.3	0
Cod liver oil	2	2	2	2	2	2
Olive oil	8	8	8	8	8	8
Starch	77	77	77	77	71	54
Selenium as sodium selenite, parts per million	0	0	0	15	15	15
Protein in the diet, per cent	7	7	7	7	13	30

to the quantity of protein in the diet while cystine and methionine in amounts sufficient to support normal growth in rats on a low casein diet fail to mitigate the toxic effects of selenium.

The mechanism of the protein-selenium antagonism is still a matter of conjecture. It may be, as has been suggested previously, that ultimately an explanation will be found in the differential action of selenium compounds on enzymes concerned with metabolic processes.[35] Their inhibiting effect on certain of the respiratory enzymes, more particularly those concerned with dehydrogenation of intermediary carbohydrate metabolites, has been pointed out. Equally interesting is the failure of selenium to affect adversely liver arginase, an enzyme concerned in protein metabolism.

Whatever the explanation for this antagonism may be, it is a matter of considerable practical interest. Moreover, additional evidence has been rapidly accumulating, emphasizing the importance of dietary protein in the prevention of liver injury from other toxic agents. Goldschmidt, Vars and Ravdin[40] have recently reported a protective action conferred by high dietary protein against the liver injury from inhalation of chloroform, a type of liver injury quite different from that produced by selenium.[41] Miller and Whipple[42] have similarly reported liver injury in the dog from chloroform anesthesia to increase in extent as the protein body stores were depleted. Messinger and Hawkins[43] also concluded that the extent of liver injury produced by arsphenamine in dogs is related to the diet fed and that protein is most effective in preventing it. Whether these are due to specific detoxification by protein or to accelerated regeneration of liver protein needed for repair is not certain. In the present instance the protective action of protein would seem to be a true detoxification since all the known toxic manifestations of selenium poisoning, the effusions, the anemia, the impairment of growth, as well as the liver injury, are equally prevented. The recent observations by Meyer[44] concerning an increased resistance to diphtherial toxin in rats on a diet rich in protein may also be mentioned in this connection. It is clear that the role of dietary protein in intoxications will require further elucidation.

SUMMARY AND CONCLUSIONS

Though human poisoning in selenium endemic areas from the ingestion of naturally occurring seleniferous foodstuffs has not been definitely established, the evidence of absorption of selenium in man in such areas, sometimes in amounts sufficient to cause harmful effects in experimental animals, appears to be conclusive.

The positive diagnosis of chronic endemic selenium poisoning in man is difficult. Careful consideration of the experimental data on the metabolic fate of selenium in the body and its toxicologic effects as outlined herein will suggest the clinical and laboratory procedures to be employed in the tentative diagnosis of suspected cases.

ABSTRACT OF DISCUSSION

DR. J. H. STERNER, Rochester, N. Y.: During a routine survey of potentially hazardous chemical exposures, selenium was found in the urine of a chemist who was synthesizing an organoselenium compound. In the subsequent studies the advice and help of Dr. Smith and his associates have been invaluable, and I want to take this opportunity to express our appreciation. His comprehensive paper on the toxicology of selenium is so adequate that I shall confine my remarks to a few supplementary studies. Chemists synthesizing methylbenzoselenazole absorbed and excreted in the urine considerable amounts of selenium. The absorption occurs almost entirely through the intact skin. Protective devices such as rubber and synthetic rubber gloves give only temporary protection, as the compound readily penetrates them. By requiring frequent changes of new gloves, protective cream and scrupulous care in handling, the absorption has been materially lessened, but complete prevention of such absorption and excretion is not yet accomplished. There have been no symptoms or signs suggestive of toxic effects in any of the workmen so exposed, nor have serial comprehensive blood studies or hepatic and renal function tests indicated any injury. In one case the urinary excretion averaged 5 mg. of selenium a day for a period of a week; I believe this is a greater amount than has been reported previously in the human being. To demonstrate the skin absorption I dropped 0.1 cc. of the selenazole (the vapor pressure is negligible) containing about 50 mg. of selenium on my hands, removing it by thorough scrubbing after thirty minutes. During the next four days over 5 mg. of selenium was excreted in the urine, with trace amounts only in the stools. Animal studies have shown the low toxicity

39. Smith, M. I., and Stohlman, E. F.: J. Pharmacol. & Exper. Therap. **70:** 270 (Nov.) 1940.

40. Goldschmidt, S.; Vars, H. M., and Ravdin, I. S.: J. Clin. Investigation **18:** 277 (May) 1939.

41. Lillie, R. D., and Smith, M. I.: Am. J. Path. **16:** 223 (March) 1940.

42. Miller, L. L., and Whipple, G. H.: Am. J. M. Sc. **199:** 204 (Feb.) 1940.

43. Messinger, W. J., and Hawkins, W. B.: Am. J. M. Sc. **199:** 216 (Feb.) 1940.

44. Meyer, A. R.: Proc. Soc. Exper. Biol. & Med. **41:** 404 (June) 1939.

of selenium as the selenazole compared with the inorganic selenate; the LD_{50} dose for both mice and rats is about 120-130 mg. per kilogram, while that for sodium selenate is 3-5 mg. (Se) per kilogram. The rapidity of excretion may partly explain the low toxicity. In animals, 80 to 90 per cent of the intramuscularly injected selenium (as selenazole) is recovered in the urine within forty-eight hours after injection. The retention of selenium in the tissues after selenazole absorption is small in contrast with that of inorganic selenium compounds or the naturally occurring organic ones. The tissues of rats killed one week after the last daily injection of five successive doses of 5 mg. each contained a total of 10 to 15 micrograms in the liver, traces in the kidney, none in other tissues (including the muscle site of injection).

SURGICAL METHODS FOR RELIEF OF PAIN

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Cancer is only too frequently accompanied by intractable pain. Should reliance be placed on morphine and its derivatives to allay suffering, or should an attempt be made to relieve the pain by blocking afferent pathways leading from the involved area? The pain from cancer is constant and harrowing without surcease by night or day. Relief afforded by morphine is intermittent; pain ceases when the drug takes hold, then reappears. The patient bears with it as long as he can, then begs for more morphine. But section of afferent pathways, carefully planned and properly performed, can result in complete and permanent relief of pain.

Unfortunately, however, the problem is not as simple as it seems. The methods at one's disposal for the relief of pain are not completely satisfactory. Chordotomy, rhizotomy, section of the branches or sensory root of the trigeminal nerve or injection of alcohol into the spinal subarachnoid space all involve the patient in definite hazards. Chordotomy, rhizotomy or section of the trigeminal root imply a major surgical operation with its attendant risks in persons already debilitated by malignant disease. The anterolateral columns lie adjacent to the pyramidal tracts. A badly placed incision in the cord can result in motor weakness in the extremities. Furthermore, bilateral chordotomy is followed in at least 10 per cent of cases by urinary retention, temporary or permanent. Rhizotomy causes complete loss of all modalities of sensation. If it is performed for pain in the arm due to involvement of the brachial plexus consequent on metastasis from mammary cancer, the arm and hand are rendered useless, for although they can be moved no sense of their position remains. Subarachnoid injection of alcohol may paralyze motor as well as sensory nerves and cause urinary retention or weakness in the lower extremities.

The problem of relief of pain is further complicated by the spread of the cancer with the involvement of afferent pathways adjacent to those severed. A uterine or prostatic cancer may cause intense pain in one flank or down one leg. A unilateral chordotomy or subarachnoid alcohol block may give relief for two or three months. Then, as the growth spreads, equally severe distress may appear on the opposite side.

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From the Neurosurgical Clinics of the Hospital of the University of Pennsylvania and of the Graduate Hospital of the University of Pennsylvania.

From the practical standpoint, therefore, the decision to attempt to relieve pain by blocking afferent pathways must rest on a number of factors: the position and rapidity of growth of the cancer; the probable period of life expectancy of the patient; the amount and location of the pain; the patient's reaction to it, and the dosage of opium necessary for its control. Finally the patient's general condition as an operative risk requires careful consideration before radical surgical intervention is proposed. Roentgenograms of the chest should always be taken to determine the presence or absence of pulmonary metastases. If the lungs are involved or if the sufferer's general physical condition suggests a life expectancy of less than three months radical surgical intervention should not be attempted unless the pain is devastating. Under such conditions an attempt to block afferent pathways by the injection of alcohol into the subarachnoid space or further recourse to morphine is indicated.

The purpose of this article is to show what can be done for relief of pain by interruption of sensory pathways, the hazards involved and what justification exists for suggesting these procedures rather than continuing

TABLE 1.—*Cancer of Maxillary Antrum and Upper Jaw*

			No. of Cases
Total cases			40
Pain relieved			26
Pain partially relieved			6
Pain not relieved			6
Died			2
Treatment		**Results**	
Alcohol injection 27 cases	2d division	16 cases	
		Pain relieved	11
		Pain not relieved	5
	3d division	3 cases	
		Pain relieved	2
		Pain not relieved	1
	2d and 3d divisions	8 cases	
		Pain relieved	5
		Pain 60% relieved	3
Intracranial neurectomy, 2d and 3d divisions, 6 cases		Pain relieved	2
		Pain 75% relieved	3
		Died	1
Avulsion of sensory root, 7 cases		Pain relieved	6
		Died	1

with morphine or dilaudid hydrochloride sedation. Three groups of patients have been selected: those with pain in the face and neck due to cancer of the face, jaw, mouth and sinuses with or without metastases to the cervical glands; those with pain in the arm from mammary cancer or axillary or supraclavicular metastases involving the brachial plexus, and lastly a group with abdominal or pelvic disease producing pain anywhere below the ensiform process.

In the first group the afferent pathways involved comprise the trigeminal and glossopharyngeal nerves and the upper four or five cervical posterior roots. Pain within the trigeminal distribution can be handled by blocking its various branches or sectioning the posterior root. If the growth is in the base of the tongue or tonsillar pillars so that swallowing is painful, the glossopharyngeal nerve must also be sectioned. Extension of the pain into the neck demands cervical rhizotomy. The only pain accompanying cancer of the head and neck which cannot be alleviated by block of the appropriate afferent pathways is that which is referred deep in the ear.

In this group are included one hundred and eight alcohol injections into one or more of the divisions of the trigeminal nerve and forty-nine operative procedures directed against the fifth and/or ninth cranial nerves with or without cervical root section. Reference to

TABLE 2.—*Cancer of Ethmoid and Sphenoid Sinuses, Cheek and Skin*

			No. of Cases
Ethmoid and sphenoid sinuses			5
Pain relieved			1
Pain partially relieved			1
Pain not relieved			3
Cheek, skin			19
Pain relieved			14
Pain not relieved			3
Died			2
Treatment		**Results**	
Alcohol injection, 2d division fifth cranial nerve, 2 cases		Pain not relieved	2
Avulsion of sensory root of fifth nerve, 3 cases		Pain relieved	1
		Pain 60% relieved	1
		Pain not relieved	1
Alcohol injection, 11 cases	2d division	7 cases	
		Pain relieved	5
		Pain not relieved	2
	2d and 3d division	4 cases	
		Pain relieved	3
		Pain not relieved	1
Intracranial neurectomy, 2d and 3d division, 2 cases		Pain relieved	2
Avulsion of sensory root of 5th nerve, 6 cases		Pain relieved	4
		Died	2

tables 1 to 6 will show the results of various methods of attack on afferent pathways leading from malignant disease in different areas of the face and neck. As might be expected, cancer situated within the sensory area supplied by the second division of the fifth cranial nerve was most successfully handled; first because the central position within the sensory area of this nerve

TABLE 3.—*Cancer of Mandible*

			No. of Cases
Total cases			27
Pain relieved			17
Pain not relieved			8
Died			2
Treatment		**Results**	
Alcohol injection, 21 cases	3d division	14 cases	
		Pain relieved	9
		Pain not relieved	5
	Inferior dental and lingual nerves	1 case	
		Pain not relieved	1
	2d and 3d divisions	6 cases	
		Pain relieved	4
		Pain not relieved	2
Avulsion of sensory root, 6 cases		Pain relieved	4
		Died	2

allows for an ample surrounding area of anesthesia if the whole root is cut, and hence the growth must spread wide and rapidly to reach a sensitive zone; and second because in the surgeon's hands the second division of the trigeminal nerve can be more accurately blocked than the third. Alcohol block of the second and third divisions may be more difficult when a neoplasm is present. Not infrequently the cancer may dislodge the nerve from its normal anatomic position. Cancer of the side of the tongue, floor of the mouth or tonsil produced pain which was difficult to relieve until Fay,[1] Stookey[2] and Dandy[3] showed that severing the ninth and upper cervical roots in addition to the fifth gave excellent results. A unilateral suboccipital craniectomy with or without midline extension depending on the need for cervical rhizotomy must be performed in these cases. Recently in 10 consecutive cases I have substituted section of the descending root of the fifth nerve in the medulla as suggested by Sjöqvist[4] (medullary tractotomy) for section at the pons. In 9 of the patients the consequent relief of pain was highly gratifying. In table 6 all operative procedures are grouped together whether a transtemporal approach to the sensory root of the trigeminal nerve or a unilateral suboccipital approach to the fifth, ninth and upper cervical posterior roots was performed. The operative mortality is high (18 per cent), but the percentage of complete relief from pain (80 per cent) is satisfactory. Many poor operative risks were accepted in this group, which fact accounts for the high mortality.

TABLE 4.—*Cancer of Cheek, Mucous Membrane and Tongue*

			No. of Cases
Cheek, mucous membrane			8
Pain relieved			4
Pain partially relieved			2
Pain not relieved			2
Tongue			16
Pain relieved			9
Pain partially relieved			5
Pain not relieved			2
Treatment		**Results**	
Alcohol injection, 8 cases	2d division	8 cases	
		Pain relieved	4
		Pain 50% relieved	2
		Pain not relieved	2
Alcohol injection, 16 cases	3d division	10 cases	
		Pain relieved	7
		Pain partially relieved	2
		Pain not relieved	1
	Inferior dental and lingual nerves	2 cases	
		Pain partially relieved	2
	2d and 3d divisions	4 cases	
		Pain relieved	3
		Pain not relieved	1

Cancer of the breast with metastatic spread into the brachial plexus above or below the clavicle is included in the second group of cases. Direct injection into the plexus of alcohol has never been successful in my experience. High chordotomy at the third cervical segment has been carried out on three occasions but only once with satisfactory relief of pain. This should be the operation of choice, for the sense of touch and position in the arm and hand is spared and its usefulness unimpaired. The last 3 patients under my observation with axillary metastasis causing pain in the arm had pulmonary metastasis as well and consequent loss of movement of the diaphragm. A high cervical chordotomy seemed therefore contraindicated, for the motor pathways to the still functioning diaphragm might be damaged. Rhizotomy of the posterior spinal roots from

1. Fay, Temple: Observations and Results from Intracranial Section of Glossopharyngeus and Vagus Nerves in Man, J. Neurol. & Psychopath. **8**: 110 (Oct.) 1927.

2. Stookey, Byron: Glossopharyngeal Neuralgia: Surgical Treatment, with Remarks on the Distribution of the Glossopharyngeal Nerve, Arch. Neurol. & Psychiat. **20**: 702 (Oct.) 1928.

3. Dandy, W. E.: Operative Relief from Pain in Lesions of the Mouth, Tongue and Throat, Arch. Surg. **19**: 143 (July) 1929.

4. Sjöqvist, O.: Studies on Pain Conduction in Trigeminal Nerve: Contribution to Surgical Treatment of Facial Pain, Acta psychiat. et neurol., 1938, supp. 17, p. 1.

the third cervical to the second thoracic segment seems the operation of choice. This is not an altogether satisfactory procedure because it necessitates a wide laminectomy of seven vertebrae and the section of eight posterior nerve roots, a serious operation on a debilitated patient. Interruption of this number of roots is essential for complete relief of pain. If fewer roots are cut the area of anesthesia may not be sufficiently extensive to relieve the pain completely. Furthermore, as has been stated, the hand and arm are entirely insensitive and completely useless. As soon as the patient is up and around after the operation, the arm should be supported in a sling. Unless this detail is carried out the dead arm drags on the neck and shoulder, annoys the patient and may cause a dull ache in the neck and back. In this series fifteen cervicothoracic rhizotomies have been performed with two fatalities. In 8 cases the pain was entirely relieved; in 5 pain reappeared in the supraclavicular area because of the upward spread of the cancer.

Pain due to malignant disease referred to any area below the ensiform process is most effectively relieved

TABLE 5.—*Cancer of Base of Tongue, Tonsil and Neck*

		No. of Cases
Base of tongue and tonsil		36
Pain relieved		7
Pain partially relieved		9
Pain not relieved		17
Died		3
Neck		6
Pain relieved		5
Pain partially relieved		1
Treatment	**Results**	
Alcohol injection, 3d division, 23 cases	Pain not relieved	15
	Pain partially relieved	8
Avulsion of sensory root, 5 cases	Pain relieved	1
	Pain partially relieved	1
	Pain not relieved	2
	Died	1
Avulsion of 5th and 9th nerves, 8 cases	Pain relieved	6
	Died	2
Cervical rhizotomy; posterior cervical roots of 1st to 5th cranial nerves, 6 cases	Pain relieved	5
	Pain partially relieved	1

by unilateral or bilateral section of the anterolateral columns of the spinal cord (chordotomy). The segregation of afferent pain fibers in the anterolateral columns of the spinal cord was suggested by Spiller [5] in 1905, and their section for relief of pain, first carried out by Martin [6] at his suggestion in 1912. Frazier [7] published the first large series of cases in which pain was relieved by this means.

Chordotomy is an ideal operation when the incision is limited solely to the anterolateral columns of the spinal cord. The hazards connected with the procedure are that the pyramidal tracts lying posterior to the anterolateral columns may be involved with consequent motor weakness in the legs; that the pain tracts may not be completely severed if the section is not carried to the proper depth and hence relief of pain is not complete, and that if bilateral chordotomy is done these hazards are doubled and, in addition, if the section is carried too far anteriorly on both sides the fibers mediating sphincter control may be damaged, with retention of urine as a further complication. However, the landmarks for the section of the anterolateral columns are

TABLE 6.—*Total Series*

Face, mouth, neck	121 cases		157 procedures
Alcohol injection in 2d and 3d cranial nerves; 2d or 3d division of fifth nerve			108 cases
Pain relieved	53 cases	50%	Total 70 cases
Pain partially relieved	17 cases	15%	
Pain not relieved	38 cases	35%	
Operations on fifth and/or ninth nerve and/or cervical rhizotomy			49
Pain relieved	32 cases	80 % relieved	
Pain partially relieved	5 cases	12.5% partially relieved	
Pain not relieved	3 cases	7.5% not relieved	
Died	9 cases	18 % mortality	

TABLE 7.—*Analysis of Results After Chordotomy for Relief of Pain*

106 patients (49 women, 57 men)		109 chordotomies
Bilateral chordotomy		54
Unilateral chordotomy		55
	Number	**Per Cent**
Completely relieved	68	70
75% relieved (8 recurrences opposite side)	16	16.5
50% relieved (6 recurrences opposite side)	9	9
Not relieved	4	4.5
Died	12	11

definite, the point of the attachment of the dentate shows the level of the anterior border of the pyramidal tracts and with experience motor weakness should always be avoided. Furthermore, with the use of local anesthesia (section of the tracts is not painful) and with repeated testing of the sensory level as the incision is deepened the necessity for too extensive section can be easily avoided. When the sensory level as determined by

TABLE 8.—*Summary of Types of Painful Lesions Requiring Chordotomy*

Cancer of urogenital tract or genitalia	64
Cancer of vertebrae	19
Gunshot wounds of spine	4
Retroperitoneal sarcoma	2
Other causes	20

TABLE 9.—*Complications After Bilateral Chordotomy*

Vomiting		12
Distention		14
Retention of urine		23
(Eight patients had cancer of bladder, four had previous subarachnoid alcohol injection)		
Motor weakness		9
Died		7
Meningitis	2	
Shock	2	
Cachexia	3	

immediate tests on the operating table is above the area to which the pain is referred, the incision into the cord is of sufficient depth. A unilateral chordotomy is always to be preferred to bilateral section. However, nice judgment is required in reaching this decision. Particularly is this true when the cancer involves the genital or urinary tract. While the pain may be unilateral when the patient is first seen, experience with this problem soon shows that as the cancer spreads the opposite side may become involved. A careful

5. Spiller, W. B.: The Occasional Clinical Resemblance Between Caries of the Vertebrae and Lumbothoracic Syringomyelia, and the Location Within the Spinal Cord of the Fibers for the Sensations of Pain, and Temperature, Univ. Pennsylvania M. Bull. **18**: 147, 1905-1906.

6. Spiller, W. B., and Martin, Edward: The Treatment of Persistent Pain of Organic Origin in the Lower Part of the Body by Division of the Anterolateral Column of the Spinal Cord, J. A. M. A. **58**: 1489 (May 18) 1912.

7. Frazier, C. H.: Section of the Anterolateral Columns of the Spinal Cord for the Relief of Pain, Arch. Neurol. & Psychiat. **4**: 137 (Aug.) 1920.

estimation should be made of the exact location and radiation of the pain. Only too often patients complain bitterly of pain in one flank or leg, but after repeated and detailed questioning they finally admit that, while the major pain is on one side, occasional twinges are noted on the other. A unilateral chordotomy or subarachnoid block may completely relieve this major pain, but within six or eight weeks the minor contralateral pain hitherto unnoticed now reaches major proportions. My own experience is that unilateral chordotomy should be done and repeated on the opposite side if this situation occurs. The patient's family should always be warned that this may be necessary if an increase in the size of the growth causes spread of the pain or if the original pain was bilateral although referred chiefly to one side.

Fig. 1.—Patient with sarcoma of the parotid gland with pain in the distribution of the trigeminal nerve. Complete relief occurred after section of the descending sensory root of the fifth cranial nerve in the medulla (medullary tractotomy).

Taylor [8] has shown that a unilateral laminectomy can easily be done. At present I perform a unilateral laminectomy of the second and third thoracic vertebrae. The muscles on one side only are separated from the spines. Ample exposure for section of the cord at the third or fourth thoracic segment can thus be obtained. Since the muscles on one side alone are disturbed postoperative pain and disability are greatly decreased. For bilateral chordotomy the first to the fourth spines and laminas are removed and sections made at the second thoracic segment on one side and the fourth on the other. If a section is made at exactly the same level on each side a transverse myelitis can occur.

8. Taylor, A. S.: Unilateral Laminectomy, J. Nerv. & Ment. Dis. **39**: 257, 1910.

Tables 7 to 10 give the statistical results with unilateral and bilateral chordotomy.

Injection of absolute alcohol into the subarachnoid space has been performed one or more times on 31 patients. In 15 cases relief of pain was satisfactory, in 6 the relief was partial, and ten injections were

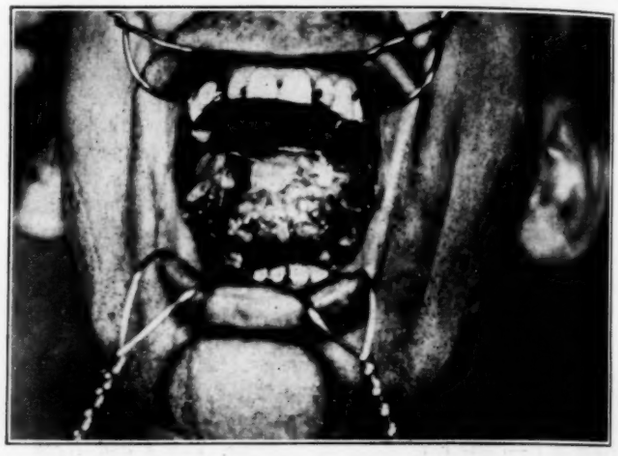

Fig. 2.—Lesion at the base of the tongue requiring section of the fifth and ninth nerves and upper cervical roots for relief.

entirely unsuccessful. In a patient in whom the alcohol (12 minims [0.74 cc.]) was introduced into the midthoracic region a partial weakness of one leg developed and persisted for about a year. A second patient had partial paralysis of both legs and complete relaxation of the sphincters after the introduction of 16 minims (1 cc.) of absolute alcohol into the lumbar subarachnoid space. Pain in this case was unaffected.

In the past years unilateral chordotomy has only rarely produced loss of sphincter control. However, recently in 3 of 4 cases in which unilateral chordotomy was performed after unsuccessful attempts to relieve the pain by injection of alcohol into the subarachnoid space, sphincter control was lost. In 2 patients return of function occurred within a month, but the third seems to have suffered permanent damage. The alcohol injections interfere with sphincter control on the side to which the pain is referred without necessarily relieving the pain. If now a chordotomy is carried out, of course on the contralateral side, the sphincter fibers on this side may be damaged and the result may be complete loss of sphincter tone.

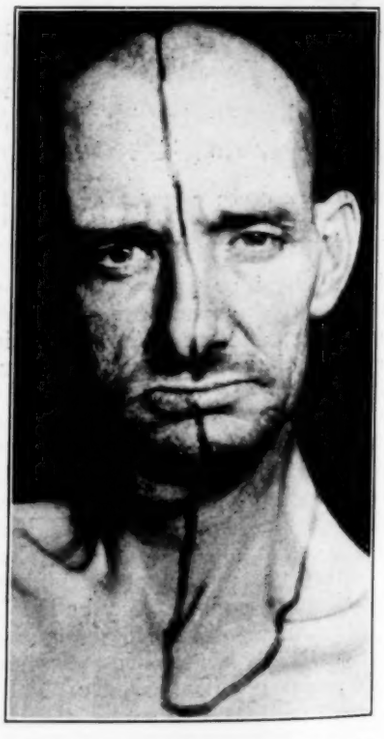

Fig. 3.—Same patient as in figure 2 with anesthesia produced by the procedure outlined. Complete relief of pain.

When chordotomy or subarachnoid injection of alcohol results in difficulties in sphincter control, to attribute this complication entirely to the procedure is manifestly unfair. Frequently a vesicular, prostatic or uterine cancer involves the motor, sympathetic or parasympathetic nerves controlling this function. Consequently, a little further damage can precipitate retention of urine. Fortunately, in most instances bladder and rectal sphincter control is rapidly regained.

TABLE 10.—*Complications After Unilateral Chordotomy*

Vomiting	4
Distention	4
Retention of urine	6
(Three had cancer of prostate. Three had previous subarachnoid alcohol injection)	
Motor weakness	5
(Two had previous subarachnoid alcohol injection)	
Died	5
Cachexia	3
Pneumonia	2

Fig. 4.—Patient with recurrent scirrhous carcinoma involving the right mamillary region and axilla. Complete relief after rhizotomy of the fourth cervical to the second thoracic nerves.

TABLE 11.—*Results with Injection of Alcohol into the Subarachnoid Space*

	Number of Patients	Per Cent
Total patients	31	
Relief of pain	15	50
Partial relief of pain	6	20
No relief of pain	10	30
Hemiparesis after injection	1	
Paralysis of legs and sphincters after injection	1	

Presacral nerve section for relief of pelvic pain has not been performed in this clinic sufficiently often to warrant any statement as to its efficacy.

A patient suffering intractable pain from cancer can be relieved at a certain price. If the price to be paid for freedom from pain has been more clearly emphasized by the figures given, they have served their purpose.

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ABSTRACT OF DISCUSSION

DR. BYRON STOOKEY, New York: I am in agreement with the author. Unfortunately the majority of patients coming to neurosurgical clinics have already acquired drug addiction—at least, that has been our experience in New York. In such cases relatively poor results are obtained whatever procedure is employed. In only 2 patients with advanced drug addiction have I had successful results with section of the pain tracts. Dr. Grant has gathered together the most extensive statistics available in the country, having grown up in Dr. Frazier's clinic and carried on with so much skill the traditions which Dr. Frazier developed. The relief of pain is associated with a number of other advantages. For example, it makes it possible to do dressings and to carry out otherwise painful treatments without unduly disturbing the patient. Dr. Grant has spoken of areas requiring extensive neurosurgery. These are located in the region of the ear and the petrous body, where there is an overlap of adjacent nerve segments. The ear represents embryologically a region of condensation covering the dermatome supplied by the fifth cranial nerve, the seventh, the ninth, the tenth and the second cervical, so that extensive operation is necessary if afferent pain pathways are to be severed. Dr. Grant's statement that one must not consider mortality rate is deserving of emphasis (though his own mortality rate is exceedingly low). These patients must be relieved of pain, irrespective of their condition. I have been surprised in operating on persons apparently in excellent health, whose life expectancy would appear to be a matter of several years, to find that so comparatively simple an operation as a unilateral chordotomy may cause them to go downhill rapidly, though their pain has been relieved. This corresponds with the experience of the general surgeon who does a simple laparotomy for a patient with extensive malignant disease. In other words, we are dealing with a person who is toxic as a result of a widespread malignant process. The prime duty of the neurosurgeon is to relieve pain, and the procedures Dr. Grant has used—dorsal root section of the fifth nerve, section of the glossopharyngeal nerve, section of the second, third and fourth cervical roots for pain about the jaw and neck, unilateral chordotomy followed by bilateral chordotomy—should, I believe, be employed more frequently than they are for the relief of intractable pain. Many physicians seem to be unaware of the measure of relief offered by neurosurgery. If it were more widely known that relief can be obtained for the duration of the patient's existence, more would no doubt avail themselves of the neurosurgeon's service. As soon as the physician determines that the pain is due to a malignant disease and realizes on the basis of clinical experience that it will increase, he should see that neurosurgical measures are instituted and not postponed until suffering has become excessive and the patient too weak for operation.

DR. FRANCIS C. GRANT, Philadelphia: Dr. Eugene Pendergrass and Dr. George Pfahler, who have sent me the greater number of these cases, have realized that it is often wise to advise an operation of this type at an early period. A number of patients who were not suffering any great amount of pain were sent to me with the recommendation that the nerve or nerves be cut because experience has shown that severe pain always resulted from a lesion of this type in this position. Consequently, pain has never been a serious factor in these cases and treatment of whatever type desired, excision, the insertion of radium needles, intensive roentgen ray or radium therapeusis could be pushed to the limit, since it did not produce pain. This is, in my opinion, a definite but little considered advantage in nerve section. Some of these patients certainly have remained cured beyond the five year period because the amount of treatment given to them could be pushed to the limit. The complete absence of pain at all times maintained their health and strength and aided in the effectiveness of the treatment. I was glad to hear Dr. Stookey emphasize this point because in my opinion it is of considerable importance. I believe it is much better to prevent these people from having pain, to operate on them when they are still good operative risks, than it is to wait until the disease has extended so far that they have already been subjected to devastating pain and consequently are in much less satisfactory condition surgically or to receive the maximum benefit from any treatment used.

PERITONEAL EXUDATE

A GUIDE FOR THE DIAGNOSIS AND PROGNOSIS OF PERITONEAL CONDITIONS

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The existing methods for diagnosis of various conditions affecting the peritoneum have not been uniformly satisfactory. The deficiency in the exact procedures has been felt especially in certain situations such as the recognition and differentiation of primary and secondary peritonitis in children, the determination of the bacterial species in the primary type and the separation of irritative from infectious conditions of the peritoneum. Even less adequate are the available means of establishing prognosis of a phase of peritonitis. The degree of bacterial activity within the peritoneal cavity, especially in the earlier stages of an infection, does not produce clinical manifestations comparable to the potential damage of which the bacteria are capable. The sudden transformation of a patient's condition from a relatively benign to a critical state is by no means as unexpected as the outward manifestations would indicate. The major activities of the bacteria occur within the confines of the peritoneal cavity somewhat isolated because of a functional impairment of the serous membrane. Multiplication of bacteria and production of toxic substances proceed within the cavity until sufficient quantities of the toxic products become available for absorption. As a result, a profound intoxication makes its sudden appearance without obvious preliminary clinical warnings. Since peritonitis is a rapidly progressing disease, with each of its stages requiring individual therapeutic management,[1] treatment is handicapped also by the absence of satisfactory criteria that would indicate the degree of infection.

During a series of experimental investigations concerning the interrelationship between infection and resistance [2] in peritonitis, it was noted that several elements in the peritoneal fluid varied with the conditions of the experiment. On the basis of this observation and with the background of available data regarding bacteriology and cytology of peritonitis and the diagnostic abdominal puncture in children, the peritoneal fluid of a number of patients with varying intra-abdominal conditions was examined and correlated according to the stage of the disease and the eventual outcome.

BACKGROUND OF THE PROBLEM

Cytology of the Peritoneal Fluid.—There is a considerable volume of literature relative to the cytologic changes within the peritoneal cavity induced in response to bacterial and other injurious substances. However, most of the investigators were concerned largely with the type of cell evoked during the inflammatory process. The peritoneal cavity was employed merely as a useful anatomic site for cytologic studies. Simon,[3] Buxton and Torrey,[4] Bordet [5] and Wallgren [6] maintained that the clasmatocyte was the essential cell in the removal of bacteria from the infectious field. Gay and his co-workers [7] reaffirmed and extended the significance of the clasmatocyte from the point of view of local immunity, which they asserted to represent "a locally superior mechanism for the disposal of the particular micro-organism rather than a local mobilization of antibodies generally present in the body." Herrmann [8] indicated that this concept was applicable to peritonitis. He interpreted his experiments on rabbits to show that the defense process is one of local immunity. Nakahara [9] injected oil intraperitoneally and followed it in a few days with various micro-organisms which he found phagocytosed by clasmatocytes. On the basis of these observations and the survival of some of the animals, he concluded that the defense mechanism was largely one of local immunity and that the clasmatocyte was responsible chiefly for the removal of bacteria.

My associates and I,[10] on the basis of our investigations on peritonitis, were unable to accept either the concept of local immunity or the clasmatocyte as exercising any significant part in the disease. We felt that our experiments repeatedly indicated the defense mechanism to be one of a local manifestation of a general resistance with the polymorphonuclear leukocyte constituting the essential element in the struggle against the infecting agent.[10] Nylander [11] studied the inflammatory response of the omentum in man and arrived at the conclusion that the defensive function depends on the activity of the polymorphonuclear. Coller, Ransom and Rife [12] and Coller and Brinkman [13] examined the peritoneal fluid of dogs subjected to peritonitis and concluded that the polymorphonuclear leukocyte was the important cell as far as phagocytosis was concerned.

In an effort to determine the cause of the apparent discrepancy in the results of the two opposing groups of workers, Martin and I [14] investigated several of the factors concerned in such experiments (animal and bacterial species, state of resistance and site of lesion). We concluded that the smaller laboratory animals, such as the rat and the rabbit, produce a much greater number of clasmatocytes than the dog. These cells, however, do not appear in significant numbers in response to a bacterial invasion but only after the removal of the bacteria by the polymorphonuclears. The present study adds to the probable clarification of the problem.

Bacteria in the Peritoneal Fluid in Peritonitis.—Previous investigations of bacteriologic problems in peritonitis consisted in the identification of bacterial species and their correlation with the location of the lesion, the symptoms and the outcome of the case. Tavel and Lanz [15] studied the bacteria which contaminated

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14. Steinberg, Bernhard, and Martin, R. A.: Inflammation of Serous Surfaces: Factors Modifying Types of Cell Response, Arch. Path. **25**: 792 (June) 1938.
15. Tavel, E., and Lanz, O.: Mitt. a. Klin. u. med. Inst. d. Schweiz **1**: 1, 1893.

the peritoneum as a result of lesions in various intra-abdominal organs. They found a single species of bacteria in some instances but more often a multiplicity of types. Absence of micro-organisms was associated with recovery of the patient. Veillon and Zuber,[16] Friedrich,[17] von Wendt,[18] Manahan[19] and Heyde[20] concerned themselves largely with the identification and the incidence of the various micro-organisms. Meleney, Harvey and Jern[21] correlated the bacteriologic changes in peritonitis due to disease of the gastrointestinal tract and gallbladder with the nature of the lesion, the symptoms and the outcome of the case. Their observations substantiated and extended those of Tavel and Lanz. Meleney, Harvey and Jern observed that recovery was associated with bacteria-free smears and either with negative cultures or with those containing a small number of bacterial species. They concluded that "comparison of smear and culture with the pathologic condition at the time of operation gives a sound basis for prognosis." In a subsequent investigation Meleney, Olpp, Harvey and Jern[22] again observed that the bacteria found usually in peritoneal exudates consisted of the colon bacillus, the green streptococcus and the Welch bacillus. In addition, they noted that smaller doses of these bacteria were required to induce death whenever two or more species coexisted.

TABLE 1.—*The Peritoneal Fluid in Various Diseases*

Peritoneal Infections	No. of Cases	Peritoneal Irritations	No. of Cases
Appendical peritonitis	35	Heart failure with ascites	20
Perforated peptic ulcer	11	Liver cirrhosis with ascites	5
Large bowel perforation	21	Malignant peritoneal transplants	9
Gangrene of bowel	4	Portal obstruction	2
Intestinal obstruction followed by peritonitis	6	Nephritis with ascites	10
Bile peritonitis	2	Pancreatitis	3
Gonococcic peritonitis	2	Intestinal obstruction	8
Streptococcic peritonitis	2	Circumscribed infection	14
Pneumococcic peritonitis	3	Fallopian tube pregnancy with rupture	4
Tuberculous peritonitis	2		
Fungous peritonitis	1		
Total number of cases	89	Total number of cases	75

Phagocytosis in the Peritoneal Fluid.—Wilkie[23] noted a relationship between phagocytosis and the outcome of the case. He expressed the view that phagocytosis of the bacteria by the polymorphonuclears, especially in the presence of clasmatocytes with ingested polylobed cells, indicated survival. Carslaw[24] amplified the subject with the important observation that phagocytosis of bacteria was the significant criterion of recovery and that the phase of the disease influenced the number and the character of the polymorphonuclears. The concept of a relationship between phagocytosis and recovery was further extended by studies made by my associates and me.[25] We pointed out that rapid mobilization of polymorphonuclears in sufficient numbers with an equally rapid ingestion of bacteria is essential for survival, that persistence of free bacteria is associated with poor prognosis and that the number of polymorphonuclears with phagocytosed bacteria must show a definite proportion, not exceeding 25 per cent, to achieve recovery.

Abdominal Punctures.—The difficulty in establishing the diagnosis of peritonitis in children has prompted several investigators to perform abdominal punctures in order to secure peritoneal fluid for examination and diagnostic aid. Solomon[26] and Panichi[27] made the earlier attempts and by noting the presence and the species of bacteria were able to determine the existence of peritonitis. Denzer[28] developed a trocar through which he inserted a glass capillary tube into the peritoneal cavity. A small drop of fluid entered by capillary attraction and rose in the glass pipet. Denzer obtained peritoneal fluid from several children and was able to establish a diagnosis of peritonitis by the presence of bacteria in the smears. Neuhof and Cohen[29] laid stress on the gross appearance of the peritoneal fluid. Lazarus,[30] Ransohoff and Greenbaum[31] and Cole[32] advocated abdominal puncture in children when the diagnosis is uncertain. A steel capillary pipet to obtain minute quantities of peritoneal fluid from the serous surface was devised.[33] Peritonitis was divided into three stages and criteria were supplied for their dif-

TABLE 2.—*Elements in the Peritoneal Fluid Which Constitute Criteria for a Check on the Diagnosis, Prognosis and Treatment of Peritoneal Conditions*

- Cells
  - Polymorphonuclears
    - Neutrophils { intact or degenerated
    - Eosinophils { intact or degenerated
  - Exfoliated mesothelial, intact or degenerated
  - Lymphocytes and monocytes
- Bacteria
  - Number in an average oil immersion field
  - Species: gram-negative and positive rods and cocci
  - State of bacterial body: intact or granular
- Phagocytic leukocytes
  - Proportion of cells with bacteria in 100 leukocytes
  - Proportion of free to phagocytosed bacteria
  - State of bacterial body within the leukocytes
  - State of the leukocytes
- Extraneous substances
  - Cholesterol crystals
  - Food particles
  - Mucin
  - Oil globules
  - Blood

TABLE 3.—*An Analysis of 75 Cases of Diffuse Peritonitis in Which the Final Outcome Was Correlated with the Number of Free Bacteria in the Peritoneal Exudate*

Number of Free Bacteria in Average Oil Immersion Field of a Peritoneal Exudate Smear	Number of Patients	Outcome
0 to 6	22	All survived
6 to 10	18	11 survived, 7 died (at death the bacteria exceeded 10 per field)
10 or over	21	19 died, 2 survived (both formed a localized abscess)
Patients began with 0 to 6 bacteria per field, progressing to 6 to 10 and finally to over 10	14	All died

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26. Solomon, H.: Berl. klin. Wchnschr. **43:** 45, 1906.
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29. Neuhof, H., and Cohen, I.: Ann. Surg. **83:** 454 (April) 1926.
30. Lazarus, S. D.: Am. J. Surg. **17:** 70 (July) 1932.
31. Ransohoff, J. L., and Greenbaum, J. V.: Arch. Pediat. **42:** 315 (May) 1925.
32. Cole, W. H.: Surgery **1:** 386 (March) 1937.
33. Steinberg, Bernhard: Stages in Peritonitis Based on the Defense Mechanism in Relation to Treatment, Arch. Surg. **39:** 770 (Nov.) 1939.

ferentiation on the basis of the bacterial and cytologic appearance of the peritoneal fluid.[33]

METHOD OF STUDY

Peritoneal fluid and exudate were removed at operation, by abdominal puncture or at autopsy shortly after death. The study included 164 cases presenting various conditions (table 1). The fluid was secured in most instances from the midabdomen. From those patients who died and on whom a postmortem examination (55 per cent) was done, fluid was taken from various parts of the peritoneal cavity for a comparative study. Occasionally fluid was also obtained from widely separated areas during an intra-abdominal operation. In some cases treatment was correlated with peritoneal smears. The compilation was made during a period of slightly more than four years.

The peritoneal fluid or exudate was spread on glass slides and prepared with Gram's, Wright's and occasionally methylene blue stains. Whenever sufficient fluid was available, cell counts were made and bacteriologic cultures were taken. The smears were examined for the number and morphologic appearance of free and phagocytosed bacteria, the differential count of the cells, the state of the cell structure, the number of leukocytes with ingested bacteria and their proportion in 100 or 200 cells and the presence of extraneous substances in the peritoneal fluid. The findings on each set of slides were recorded with the total cell count and the result of the bacteriologic culture, whenever available, together with the final outcome of the case. After a sufficient number of slides exemplifying various conditions with intra-abdominal manifestations was collected, each of the elements and their modifications were catalogued according to the disease and the outcome. These analyses disclosed that every element in the peritoneal exudate such as cells, bacteria and extraneous substances as well as their morphologic variations was significant in establishing the diagnosis, in determining the prognosis and frequently in evaluating the efficacy of treatment (table 2).

Fig. 1.—Figures 1 to 6 represent smears of peritoneal exudate with diagnostic criteria of peritoneal infections. Primary peritonitis of pneumococcic type. The smear shows the presence of lancet-shaped, encapsulated diplococci.

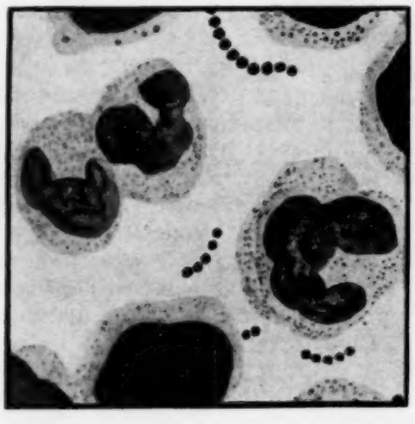

Fig. 2.—Primary peritonitis of streptococcic type showing cocci in chains.

Fig. 3.—Peritonitis, early, due to rupture of a peptic ulcer. The field contains mucinous material which outlines the bacteria with a halo.

ANALYSIS OF THE STUDY

On the basis of the peritoneal fluid and exudate, all the intra-abdominal conditions that were reviewed could be divided into two groups: (1) peritoneal infections and (2) peritoneal irritations. Invasion by bacteria was the single requirement for classifying a given case as one of infection. The micro-organisms were found free or phagocytosed or were not apparent in the examined exudate. In the latter instance, other criteria determined the diagnosis. After an infectious process has been thoroughly circumscribed in the form of an abscess, the remaining peritoneum no longer showed evidences of an infection; i. e., no bacteria were present in the peritoneal cavity except for the abscess area. The predominance of the neutrophilic polymorphonuclear leukocyte constituted the essential cytologic characteristic of an infection.

Peritoneal irritations included those conditions in which the serosal lining was subjected to some form of injury not induced directly by bacteria. The trauma to the peritoneum was due to (1) passage of fluid such as serum, plasma or excessve salt solution from the vascular system into the peritoneal cavity, (2) presence of foreign substances such as blood, bile, malignant implants, tissue juices and ferments, (3) a nearby infectious process such as may be found in an intra-abdominal organ or a localized abscess and (4) an intestinal obstruction without peritonitis. The last condition could not be placed readily in the first three categories. The predominance of the exfoliated mesothelial cell constituted the essential cytologic constituent of peritoneal irritation. This type of cell was confused at first with the clasmatocyte (macrophage) but a study of teased mesothelial tissue done under various conditions established the identity of the cell. From a review of published illustrations it is not unlikely that the exfoliated mesothelial cell was confused for the clasmatocyte by some of the other investigators. I draw a distinction between these two types of cells on the basis that the clasmatocyte is capable of phagocytosis while the mesothelial cell lining the peritoneum has not been observed to exercise such a function in the disease states that were reviewed.

Peritoneal Infections: Diagnosis.—The one essential requirement of any diagnostic procedure is the rapidity of its performance. The value of any method decreases inversely with the time consumed in performing it. Consequently the presentation concerns itself primarily with the peritoneal fluid and exudate smears. The entire procedure, including the obtaining of the fluid, the staining and the examination should be performed well within the half hour period.

The criteria of a peritoneal infection and of a particular disease entity can be differentiated further

according to the age of the lesion, the extent of the defense reaction and the virulence of the infecting agent. The following are the general characteristics of a peritoneal infection during its various periods, degrees of resistance and virulence:

Early Infection: 1. A small number of exfoliated mesothelial cells, usually not exceeding 8 per cent of all cells, is observed in the smear.

2. A small to moderate number of neutrophilic polymorphonuclears composing from 85 to 92 per cent of all cells is found in the smear. The total cell count varies from 6,000 to 25,000 per cubic millimeter of exudate.

3. From 0 to 6 free bacteria may be present in an average oil immersion field. Up to 20 per cent of the polymorphonuclears may contain ingested bacteria varying from 1 to 10. The bacteria consist frequently of a single species.

Moderately Advanced Infection: 1. A fairly large number of neutrophilic polymorphonuclears is present. The total number varies from 60,000 to 250,000 cells per cubic millimeter of exudate.

2. There are from 1 to 10 free bacteria in an average oil immersion field. Up to 20 per cent of the polymorphonuclears may contain from 1 to 5 ingested bacteria. From one to three different species of micro-organisms may be present except in instances of primary peritonitis.

Most of the mesothelial cells show marked degenerative changes of cytoplasm and nucleus.

2. The polymorphonuclears are found in small numbers and the cells show marked degenerative changes of cytoplasm and nucleus.

3. There is an exceedingly large number of free bacteria of more than one species. In primary peritonitis there is a multiplication of only one bacterial species.

4. Extraneous material such as bile crystals (cholesterol), mucin and oil globules may be found.

5. There are many red blood cells showing abnormalities of shape and color with an occasional normoblast.

Diagnosis of Specific Intra-Abdominal Diseases.—The characteristics which were described for peritoneal infections, including the modifications due to duration, resistance and virulence, are applicable to instances of peritonitis resulting from disease of the appendix and the small bowel. The following conditions show one or more deviations in the peritoneal smears and make possible a differentiation of the individual disease entities:

Pneumococcic and Streptococcic Peritonitis: 1. Diplococci, frequently with demonstrable capsules or cocci predominantly in chains are found. Pneumococci may appear occasionally in

Fig. 4.—Peritonitis, late, due to a rupture of a peptic ulcer. Fiber shreds suggest the condition.

Fig. 5.—Peritonitis, late, of appendical origin. Numerous bacteria of several species. Polymorphonuclears and mesothelial cells show degenerative changes.

Fig. 6.—Bile peritonitis. Cholesterol crystals with many degenerating polymorphonuclears and predominance of a gram-positive bacillus suggest the diagnosis.

Late Infection: 1. The exfoliated mesothelial cells may comprise up to 20 per cent of the total number of cells counted in the smear. The mesothelial cells show various degrees of degeneration of cytoplasm and nucleus.

2. Intact polymorphonuclears are found in small to moderate numbers. The total count seldom exceeds 40,000 cells per cubic millimeter of exudate. Many polymorphonuclears show various degenerative and necrotizing changes involving cytoplasm and nucleus.

3. There are from 10 to an uncountable number of free bacteria in the smear. Many, and frequently most, of the intact and the degenerating leukocytes contain from 5 to 30 ingested bacteria. The micro-organisms are almost invariably of more than one species (except in the primary type of peritonitis).

Peritoneal Infection with a Satisfactory Defense and/or a Relatively Avirulent Bacterial Invasion: 1. The exfoliated mesothelial cells are present only in the early stages of the disease and in proportions of less than 8 per cent. The cells show only slight degenerative changes.

2. The polymorphonuclears are found in large numbers and most of the cells are intact.

3. Free bacteria are rare. Less than 2 per cent of the leukocytes contain ingested bacteria.

Peritoneal Infection with a Poor Defense and/or a Virulent Bacterial Invasion: 1. The exfoliated mesothelial cells may constitute up to 20 per cent of the cells present in the smears.

short chains. The predominant presence of lancet-shaped diplococci with even a single capsule justifies a diagnosis of pneumococcic peritonitis.

2. A small to a moderate number of polymorphonuclears is present.

3. There is also a small number of exfoliated mesothelial cells, usually constituting from 2 to 5 per cent of the total number of cells in the smear.

4. The relationship between the bacteria and the leukocytes is significant. Pneumococci and streptococci are seen near the leukocytes without any tendency to phagocytosis. There may be present, however, an occasional polymorphonuclear with ingested bacteria.

Peritonitis Due to a Perforation of a Peptic Ulcer: 1. In the early period, usually in the first twelve hours, a somewhat granular mucinous material is present in the smears. The mucinous substances tend to form a clear zone halo around the bacteria. Cholesterol crystals may be present.

2. In the later periods the mucinous material is not apparent, but fiber strands and cholesterol crystals may be found.

3. There is a small number of eosinophilic polymorphonuclears, usually from 5 to 10 per cent of the cells.

4. The other criteria regarding cells, bacteria and phagocytosis are similar to those described under the heading of general characteristics.

Bile Peritonitis: 1. Cholesteral crystals appear in progressively large numbers with the increasing severity of the disease.

2. The number of polymorphonuclears showing cytoplasmic and eventually nuclear degenerative changes is out of proportion to the bacterial population. The percentage of degenerating cells varies from 5 to 80.

3. Phagocytosis is marked. Not infrequently every cell in the smear shows ingested bacteria.

4. More than one species of bacteria are found, although there is a tendency to a preponderance of the gram-positive bacillus.

5. The other criteria are similar to those described under general characteristics.

Intestinal Obstruction Followed by Peritonitis: 1. The significant deviation consists in the presence of fairly large numbers of exfoliated mesothelial cells undergoing various degrees of degenerative changes.

2. The polymorphonuclear and bacterial pictures correspond to those described under peritoneal infection.

Gonococcic Peritonitis: In the acute and subacute stages, gram-negative kidney-shaped diplococci can be found within polymorphonuclears and occasionally free in the exudate.

Tuberculous Peritonitis: 1. The characteristics vary with the state of immunity and hypersensitivity. Lymphocytes, monocytes and polymorphonuclears show variations in their respective percentages.

2. Tubercle bacilli were not found on any smears studied.

In cases of peritonitis due to disease of the large bowel, no consistent variations were observed. There was a tendency to a greater number of polymorphonuclears, and the bacterial species were less numerous. However, the deviations were not sufficiently clear cut to allow differentiations from other types of intra-abdominal infections.

Fig. 7.—Figures 7 to 10 represent smears of peritoneal fluid with diagnostic criteria of peritoneal irritations. Heart failure with ascites. Exfoliated mesothelial cells, singly and in sheets, constitute the only cell type.

Peritoneal Infections: Prognosis.—The characteristics which aid in determining the outcome of the case are represented by the differences between an early and a late infection and between a satisfactory and a poor defense. This is true for those peritoneal conditions which arise as a result of a lesion in some part of the gastrointestinal tract. The smears of the peritoneal exudate which show the presence of the criteria indicative of a poor resistance or a late infection are of a poor prognostic significance. On the other hand, smears with evidences of an adequate resistance signify a good prognosis. The percentage of polymorphonuclears with phagocytosed bacteria in relation to the total number of cells in the smear is of further prognostic significance. A favorable outcome is indicated by the presence of 25 per cent or less of cells with phagocytosed bacteria and absence of free micro-organisms. In a percentage greater than 25, even without free bacteria, the prognosis becomes increasingly less favorable.

The prognostic criteria of peritoneal infections not due to obvious diseases of the gastrointestinal tract show one or more deviations. In pneumococcic or streptococcic peritonitis a satisfactory outcome must be associated with a granularity of the bacteria. Phagocytosis, even without free bacteria but with the preservation of the bacterial bodies, represents an ineffective defense. In bile peritonitis, as the percentage of degenerated polymorphonuclears increases, the prognosis becomes proportionately poorer. In tuberculous peritonitis, an increasing number of lymphocytes indicates a developing immunity, while the reappearance of polymorphonuclears is associated with reinfection. Similar observations in tuberculous peritonitis were reported by Dworski, Smith and Gardner[34] and by Medlar.[35]

Fig. 8.—Cirrhosis of the liver with ascites. Mesothelial cells and polymorphonuclears, some of which show eosinophilic granules.

Peritoneal Infection: Check on Treatment.—Inadequate or injurious treatment is indicated by the presence of those elements in the peritoneal exudate which characterize a poor defense. On the other hand, in adequate therapy the peritoneal picture approaches that associated with a satisfactory resistance. The results of treatment may be followed by examinations of the peritoneal exudate at intervals of from eight to twelve hours. The gradual disappearance of free bacteria, an increasing number of polymorphonuclears and a decreasing percentage of cells with phagocytosed micro-organisms constitute the general evidences of effective treatment. In pneumococcic and streptococcic primary peritonitis, granularity of the bacteria is a requisite characteristic of adequate therapy. In bile peritonitis the indicators of satisfactory treatment are composed of a decreasing percentage of degenerated polymorphonuclears, disappearance of free bacteria and a percentage of phagocytic cells less than 25.

Peritoneal Irritations.—Conditions which induce an irritation of the peritoneal lining are characterized by (1) the presence of a preponderant number of exfoliated mesothelial cells, singly or in sheets, intact and degenerated; (2) a correspondingly small number of polymorphonuclears, either neutrophilic or eosinophilic, and (3) absence of free or phagocytosed bacteria. The essential differentiating factor between infection and irritation, in the absence of bacteria, consists in the preponderant content of mesothelial cells in the latter condition and of the overwhelming percentage of polymorphonuclears in the former.

Fig. 9.—Intra-abdominal metastatic malignant growth. Mesothelial cells with an occasional neutrophilic polymorphonuclear. To one side of the center is a pseudo-alveolus of a malignant cell.

In cases of heart failure with ascites, the exfoliated mesothelial cells occur in sheets as well as singly or in

34. Dworski, M.; Smith, D. T., and Gardner, L. U.: Tr. Nat. Tuberc. A. **21**: 321, 1925.

35. Medlar, E. M.: Am. J. Path. **2**: 275 (July) 1926.

small clumps. The cells show cytoplasmic edema and vacuolization. Polymorphonuclears are either rare or absent. Ascites associated with coronary thrombosis shows in addition the presence of an infrequent lymphocyte. The mesothelial cells may be confused with those of a malignant type. In nephritic ascites the mesothelial cells are relatively fewer in number than in cardiac ascites. In ascites due to cirrhosis of the liver, the mesothelial cells are found in large numbers and most frequently are single. The cells show cytoplasmic and nuclear degenerative changes. There is a small number of polymorphonuclears, usually composing from 10 to 15 per cent of the total cell number in the smear. An average of 20 per cent of the polymorphonuclears are eosinophilic. In ascites due to excessive intravenous administration of salt solution, the mesothelial cells show marked vacuolization of the cytoplasm. The cells occur mostly singly. There are no polymorphonuclears. In portal obstruction there is a small number of neutrophilic polymorphonuclears and a large accumulation of exfoliated mesothelial cells occurring singly and in sheets, many of them showing cytoplasmic and nuclear degenerative changes.

In intestinal obstruction there occur a fairly large number of mesothelial cells, mostly singly. The polymorphonuclears are neutrophilic and infrequent. A small percentage of mesothelial cells show degenerative changes. A rupture of an impregnated fallopian tube with an escape of blood into the peritoneal cavity shows the presence of many red blood cells, an occasional eosinophilic polymorphonuclear and a few mesothelial cells. In a circumscribed abscess, the peritoneal fluid contains neutrophilic polymorphonuclears with twice as many mesothelial cells. In pancreatitis there is a fairly large number of polymorphonuclears usually preponderantly eosinophilic. The mesothelial cells show marked degenerative changes. There is a fairly large number of red blood cells with some ghostlike forms. Malignant transplants provoke a moderate number of mesothelial cells, mostly singly, and a small number of polymorphonuclears. The mesothelial cells are intact and closely resemble the malignant type. A tendency on the part of malignant cells to form pseudo-alveoli or rosettes supplies a definite characteristic feature. A malignant condition of some intra-abdominal organ may be present without any cytologic evidence in the peritoneal fluid.

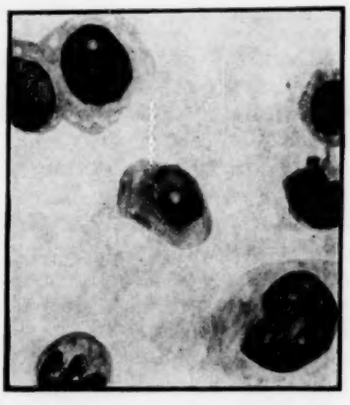

Fig. 10.—A localized abscess. Mesothelial cells with an infrequent polymorphonuclear.

COMMENT

Peritoneal fluid or exudate may be obtained either by abdominal puncture or at the onset of an intra-abdominal operation as soon as the peritoneum is incised. In the presence of sufficient fluid or thin enough exudate, an ordinary needle and syringe or a spinal puncture needle is a satisfactory instrument for abdominal puncture. Small quantities of peritoneal fluid require the use of a "capillary pipet." [33]

Peritoneal fluid may be examined advantageously during an intra-abdominal operation. A report on the smears should be available in from five to ten minutes. The smears will determine the character and the severity of the infection and will frequently furnish the diagnosis of a condition the gross appearance of which may puzzle the surgeon. Peritoneal fluid must be taken, however, prior to extensive intra-abdominal manipulation, which may alter the cellular picture. The fluid should be obtained invariably from the mid-abdomen by sterile swab, capillary pipet or needle and syringe. Fluid taken from the left and right sides of the peritoneal cavity, from the pelvis and from the direction of the diaphragm may offer occasionally additional information. Smears taken from these locations should be labeled correspondingly and interpreted only with the midabdominal smear as the basis.

The differentiation of postoperative intestinal distention either as a result of a peritoneal infection or merely because of atony of the bowel offers clinical and roentgenologic difficulties. A midline abdominal puncture with a "capillary pipet" (the urinary bladder must be evacuated prior to the puncture) and preparation of smears will supply almost invariably the differentiating characteristics. In the presence of an infection severe enough to induce paralytic ileus, the exudate will contain a predominance of polymorphonuclears, 85 to 95 per cent, with a variable number of bacteria. Atony of the bowel, in the absence of infection, will reveal a predominance of mesothelial cells. However, because of reparative processes in the peritoneal cavity and in the abdominal wall, the number of polymorphonuclears may reach from 25 to 35 per cent of the total number of cells, but it should offer no reason for error in interpretation.

The frequently expressed fear of damaging or entering a loop of bowel during abdominal puncture has no factual basis. Intestinal loops are pushed away by the point of the needle and deliberate experimental attempts to puncture the bowel by such means were not possible to accomplish. Two situations, however, will predispose to bowel puncture: (1) a markedly distended and thin walled obstructed intestine pushed against the anterior wall of the abdomen and (2) a loop of bowel bound down by adhesions to the part of the midline of the anterior wall of the abdomen at which the puncture is made. No dangerous consequences result from the entrance of a needle into the lumen of the bowel. On withdrawal of the needle, the puncture stab seals itself and the resulting contamination is inconsequential. The character of the smear obtained from the lumen of the bowel discloses its source.

The midportion of the peritoneal cavity has been demonstrated during these studies to constitute a representative area of a given condition which may exist anywhere in the peritoneum. The factors responsible for this manifestation have been investigated and, because of limitation of space and character of the subject matter, the work will be reported in another communication.

SUMMARY

The peritoneal fluid and exudate were studied in the form of smears in a number of cases presenting varying intra-abdominal conditions. These conditions were divided on the basis of the study into peritoneal infections and peritoneal irritations, according to criteria for diagnosis, prognosis and guidance in the treatment.

ABSTRACT OF DISCUSSION

DR. FRANK L. MELENEY, New York: Dr. Steinberg's contributions to our knowledge of peritonitis in the last ten years have been of great importance. In peritonitis there is a battle going on between the infecting organisms and the various defensive forces of the body, of which the peritoneal cells and the wandering cells and perhaps the exudate itself are of importance. Dr. Steinberg's examination of a large number of specimens, have shown evidence of this battle. In some cases it is evident that the bacteria are gaining the upper hand; in other cases the defensive mechanism seems to have the infection under control. I have long advocated the examination of peritoneal fluid in doubtful cases before operation, and in all surgical cases at the time of operation. I have particularly stressed the comparison of the smears with the subsequent culture as a basis for prognosis. If fewer species are found on culture than are seen in the smear, the prognosis is good. If they all grow out, showing that they are all viable, and none have been destroyed by the defensive forces of the body, the prognosis must be guarded. I believe that more careful examination of the cells and their condition will add greatly to the information which one can obtain from these peritoneal fluids. There have been two criticisms on the part of various surgeons, some of them in our own hospital, to the procedure of peritoneal puncture. One of these criticisms is, in my opinion, of no value, but the other should be considered. The first criticism is that the puncture is dangerous because it may puncture the intestine or a blood vessel. I think this is most unlikely and need hardly be considered. The other is that the fluid obtained may not be a representative specimen, may not reveal the nature of the process, and may delay an operative procedure which should be done. This criticism is justified when the peritonitis arises from the spread of infection from an initial focus far from the center of the abdomen, where Dr. Steinberg takes his specimen. I have repeatedly made smears and cultures of the peritoneal exudate as soon as the peritoneum was opened, and again from several places nearer and nearer to the focus, and have found widely varying differences, both in smear and in culture. Dr. Steinberg's specimens will correspond only to the free fluid obtained when the peritoneum is first opened and may not reveal the state of affairs near the distributing focus of infection. However, if Dr. Steinberg can tell me that his results have been consistently correlated with the clinical course, this criticism will be satisfactorily met. I should like to see his findings correlated case by case with the clinical course and an indication given by percentages when his prognosis was correct and when it was wrong.

DR. BERNHARD STEINBERG, Toledo, Ohio: Whether the material obtained from the midportion of the peritoneal cavity is representative of conditions in other parts of the cavity is obviously of prime importance. The variations of which Dr. Meleney spoke do exist, but these variations must be interpreted on the basis of the whole available picture. An infectious process that is not delimited in any part of the peritoneal cavity, whatever the distance from the midline, is characterized by a definite picture—for one, by a preponderance of the polymorphonuclear cell. Whenever the infectious process is localized, the predominating cell is the exfoliated mesothelial. Time prohibits discussion of various problems and their investigations which would explain in more detail the questions raised by Dr. Meleney. Reference may be made to some of my publications on peritonitis and to the forthcoming monograph on "Infections of the Peritoneum." Free peritoneal fluid mirrors conditions of the peritoneal cavity probably more so than the urine does that of the kidney. A focus of infection anywhere in the peritoneal cavity is reflected in the free fluid. The character of the cell, the condition of the cell, presence of extraneous substances such as mucin, bile crystals and fecal particles, the degree of phagocytosis, the number and the species of free bacteria are all to be considered in evaluating the diagnosis and in determining the prognosis. The reason the peritoneal fluid has not offered heretofore a complete picture of the nature of intra-abdominal conditions resides in the failure to utilize all the evidence present in the fluid. The more difficult part of this study consisted in evaluating and correlating the various components. A study of the bacteria alone or only of cells will give a misleading picture. For further discussion of this problem and that of bile peritonitis, sterile and infected, with or without injury or disease of the bile ducts or gallbladder, I would refer you again to the forthcoming monograph. I should like to emphasize that the peritoneal fluid examined at a given time represents the situation in the peritoneal cavity only for that time. In the next hour or two the situation may change and with it there will be a change in the character of the free peritoneal fluid. An impending rupture of a viscus will be reflected by one type of picture, an accomplished perforation of that viscus in the next hour will change radically the picture of the fluid. I should like to offer this warning: An interpretation of any procedure must be tempered by some knowledge of the course of the disease and by a liberal sprinkling of common sense.

ANEURYSM OF THE INTERNAL CAROTID ARTERY WITHIN THE SKULL

WIRING AND ELECTROTHERMIC COAGULATION

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The treatment of aneurysm of the internal carotid artery within the skull has received the recent attention of Dandy [1] and of Walsh and Love.[2] Dandy recommends a procedure of "trapping the aneurysm" between two ligatures, one placed on the artery within the skull after direct inspection of the aneurysm and the other on the artery in the neck. He has reported three cases [3] in which treatment by this approach was successful, the aneurysm in each instance being small, pea sized and readily mobilized. Larger aneurysms are difficult to handle in this way, and for these there remains, in general, ligation of the artery in the neck; this procedure is discussed at length in the papers of Walsh and Love.[2] Although successful results have been obtained, this operation does not always arrest the growth of the lesion, while it does carry with it the risk of ensuing cerebral anemia from lack of adequate collateral circulation. Hemiplegia, widespread cerebral degeneration or even death may thus result.

Other operative methods have been reported in a few cases. Dandy [4] has placed a clip on the neck of a small aneurysm of the internal carotid artery with resultant obliteration of the lesion. Tönnis [5] has successfully amputated an aneurysm through its stalk, covering the stump with a muscle transplant. He has reported also packing the lumen of such an aneurysm with muscle tissue, an operation said to have been done by Cushing.[6] Recently McConnell [7] has cured another aneurysm by

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1. Dandy (footnotes 3 and 4).
2. Walsh, M. N., and Love, J. G.: Diagnosis and Surgical Treatment of Intracranial Carotid Aneurysms, Proc. Staff Meet., Mayo Clin. **14**: 122 (Feb. 22), 192 (March 22) 1939.
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this operation whereas Tönnis [8] and Dott [9] have reported successful outcomes by simply covering the aneurysm with muscle tissue. All the methods mentioned leave much to be desired either because of limited applicability or effectiveness or because of the severity of complications.

A new operative approach has now become available as a complement to existing methods through the work of Blakemore and King [10] on the treatment of aneurysm of the aorta. They devised a practical, successful way to introduce wire into the aortic aneurysm and induce clotting by electrothermic coagulation. The practicability of the procedure depends on the observation by Blakemore and King that fast moving blood will not clot when the wire is heated, whereas the slower moving blood outside the main current will clot. The unusually good results obtained by these workers suggested the application of the method in treatment of aneurysms of the internal carotid artery within the skull. This has been accomplished in the following case:

REPORT OF CASE

The patient's first admission was on April 17, 1937, and her last discharge on Oct. 31, 1939.

History.—R. K., a Jewish schoolgirl aged 15, first appeared at the Vanderbilt Clinic, Sept. 25, 1936, complaining chiefly of diplopia, nausea and vomiting for five months. The family history and personal history were noncontributory. Her previous health and illnesses were irrelevant except for a brief unexplained convulsion as a baby and momentary generalized headaches every one to three months for the four years preceding the present illness, to which the patient paid no attention. The menses were normal, regular every twenty-eight days and moderate. The best and the present weight was 127 pounds (57.6 Kg.).

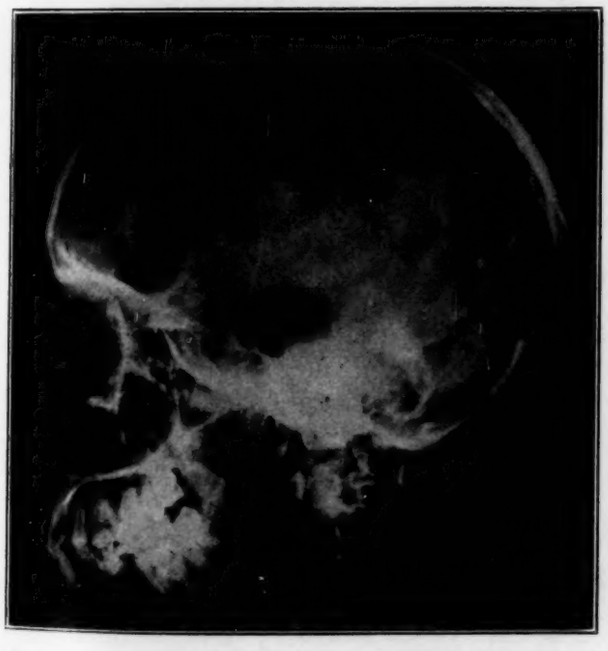

Fig. 1.—Lateral view of skull, March 17, 1938, showing status of sella turcica just prior to ligation of both common carotids.

The patient was in perfect health, an athletic, vigorous schoolgirl five months before she was seen. At that time, during a vigorous game of handball, she was suddenly seized by a severe pain in the right orbit and right temporal region. Despite bed rest the headache remained intense. Two days after onset, diplopia occurred when she looked to the right and there was persistent nausea and vomiting. An appendectomy was performed at a neighborhood hospital. Symptoms slowly improved during the next five weeks, but after a few weeks in the country the headache and diplopia returned plus paresthesias of the face and right side of the body, causing the patient to come to the Vanderbilt Clinic five months after onset. The only positive finding on physical examination was a right pupil slightly greater than the left, and questionable hyperesthesia of the right side of the face. Stereoroentgenograms of the skull showed no abnormality. No diagnosis was made. A sudden remission of all symptoms except the diplopia then occurred and lasted until April 1937, one year after onset. Severe headaches now reappeared in the right temporal region and also in the occipital area. The patient reappeared in the clinic and was admitted to the Neurological Institute.

Fig. 2.—Lateral view of skull, Dec. 8, 1938, showing spread of destruction within the sella turcica and into sphenoid sinuses, despite ligation of both common carotid arteries.

First Admission to the Neurological Institute (from April 17 to May 18, 1937).—Physical examination showed that at this time the patient, aged 16, was well developed and well nourished and appeared in good health. The blood pressure was 114 systolic, 74 diastolic. She weighed 127 pounds. There were diplopia, ptosis of the right upper lid, paralysis of the right abducens, paresis of the levator and superior oblique muscles on the right and weakness of the right internal and superior rectus muscles; the right pupil was slightly larger than the left; the fundi and visual fields (involvement of third, fourth and sixth cranial nerves on the right) were normal. There was also a small area of numbness, hyperesthesia and hyperalgesia on the right side of the face from the lateral side of the nose below the eye and over the maxilla along the zygoma to the ear. The thyroid was normal. The rest of the physical examination was negative.

Laboratory examination showed hemoglobin 74 per cent, red blood cells 4,120,000, white blood cells 8,900, polymorphonuclear leukocytes 61 per cent and blood urea nitrogen 10 mg. per hundred cubic centimeters. Fasting blood sugar was 85 mg. per hundred cubic centimeters. The urine showed no abnormalities; the blood Wassermann reaction was negative (both antigens). Spinal fluid was at a pressure of 386 mm. of water. The gold curve was 110000000. The Wassermann reaction of

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9. Dott, N. M.: Intracranial Aneurysms: Cerebral Arterioradiography; Surgical Treatment, Tr. Med.-Chir. Soc. Edinburgh, 1932-1933, p. 219; in Edinburgh M. J., December 1933.
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the spinal fluid was negative; analysis showed lymphocytes 2, globulin 0, protein 13 mg. per hundred cubic centimeters. Roentgenograms of the skull (Dr. C. G. Dyke) showed atrophy of the anterior and posterior clinoids with destruction of the lateral and inferior wall of the right optic foramen to coalesce with the superior orbital fissure. Encephalograms (Dr. Dyke) after injection of 60 cc. of oxygen showed that the cisterna chiasmatis, particularly on the right side, was lifted up by a

Fig. 3.—Lateral view of skull, Oct. 21, 1939, showing no further spread of area of destruction within the skull since examination April 13, 1939 (fig. 5).

small mass, thought to be an aneurysm of the right internal carotid artery. The olfactory test gave negative results and audiograms were normal.

A metal clip was placed by Dr. Deery on the right internal carotid artery in the neck and partly closed May 14. The closure was completed five days later. Symptoms did not improve during her two weeks in the hospital after the operation.

June 21 the patient paid a follow-up visit to the clinic. She now complained of amenorrhea since her operation (gynecologic examination revealed no pathologic condition at this time), anorexia, loss of weight and strength, constipation and mild pain in the lower abdominal region. There was also some nausea and "dizziness" when she sat erect.

Second Admission to the Neurological Institute (from June 25 to 27, 1937).—The patient by now appeared sallow, pale and chronically ill. A bruit synchronous with the pulse was heard over the right eye. Otherwise the examination was as before. The blood pressure was 120 systolic, 70 diastolic, and she weighed 116 pounds (52.6 Kg.). The laboratory observations were noncontributory. The patient was discharged without especial treatment.

A second remission occurred for three months, until September 12, seventeen months after onset, when the appearance of persistent vomiting and the return of her previous symptoms led to her first admission in Presbyterian Hospital for an investigation of the gastrointestinal tract. No abnormalities different from those already mentioned were noted.

The patient complained once that her right eye was "bulging," at which time a bruit was heard. Both the bulging and the bruit disappeared and the patient was discharged, October 18, much improved.

Third Admission to the Neurological Institute (from Dec. 7 to 21, 1937).—This admission was arranged because of the return of all her symptoms a short time after discharge from the Presbyterian Hospital.

The patient was now too weak to walk. The rest of her conditions were as brought out before. She weighed 112 pounds (51 Kg.). The spinal fluid pressure was 450 mm. of water.

Laboratory examinations showed hemoglobin 72 per cent and red blood cells 3,920,000; the white blood cell and differential counts were normal. The urine was normal except for a faint trace of albumin; microscopically there were a few hyaline casts. Blood urea nitrogen was 14 mg. per hundred cubic centimeters. The fasting blood sugar was 85 mg. per hundred cubic centimeters. The spinal fluid was normal as before. Roentgenograms of the skull (Dr. Dyke) in the anteroposterior and the postero-anterior position and right stereoroentgenograms now showed the entire right clinoid process to be destroyed and the right half of the tuberculum sellae to be eroded. The left anterior clinoid process appeared rather sharp and the posterior clinoids and dorsum were slightly atrophic. The pineal was in the midline and normal. Encephalograms (Dr. Dyke) after the injection of 60 cc. of oxygen now showed that the right side of the cisterna interpeduncularis was more markedly displaced upward than before. The sella turcica had increased in size since the first examination and the right anterior clinoid process was markedly decalcified and displaced upward. The impression was that there was an aneurysm of the right internal carotid artery progressing despite ligation of the homolateral artery in the neck.

Eye consultation showed no progression of the optic changes previously described. Visual fields were normal; the exophthalmometer readings were 20 mm. for each eye at 110 mm., probably normal. No further therapy of the aneurysm was considered, so the patient was transferred to the Presbyterian Hospital for treatment of the persistent nausea and vomiting of all she ate.

Second Admission to the Presbyterian Hospital (from Jan. 8 to June 17, 1938).—On physical examination the patient was very pale, almost waxen colored, and dehydrated, with a red tongue and dry lips. Examination otherwise was as before except for a soft systolic murmur at the base of the heart.

An electrocardiogram showed the T wave iso-electric, in leads 2 and 4 and inverted in lead 3, indicative of some heart muscle damage. The circulation time was twenty-seven seconds (decholin). The blood Wassermann reaction was negative. The blood group was O_1; the basal metabolic rate was from —30 to —43. X-ray examinations of the chest, abdomen and gastrointestinal tract were negative. Gastric expression with histamine was normal. The fasting blood sugar was 73 mg. per hundred cubic centimeters. Complete blood partition showed normal values.

The diagnosis of Simmonds' disease due to destruction of the anterior hypophysis within the sella by pressure of the aneurysm was made in view of the complete syndrome—amenorrhea, anorexia and vomiting, loss of weight, a basal metabolic rate of —43, flat dextrose tolerance curve and low blood pressure (most readings less than 100 systolic during her stay).

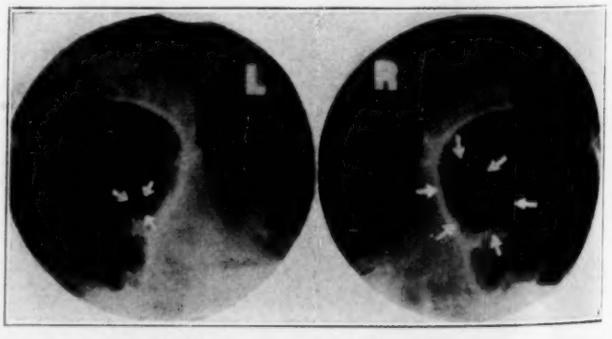

Fig. 4.—Views of orbit (courtesy Dr. Raymond Pfeiffer), Dec. 7, 1938, showing defect in lateral aspect of posterior wall of right orbit, normal optic canal in left orbit.

Attempts at treatment of this syndrome with thyroid, adrenal cortex extract and anterior hypophysial extract were uniformly unsuccessful as judged subjectively, by examination, blood pressure, basal metabolic rate and dextrose tolerance tests. Thyroid caused severe toxic symptoms before much alteration of the basal metabolic rate had occurred. Adrenal cortex extract showed no effect. Progressively increasing doses of anterior hypophysial growth extract resulted in no change, the attempt being abandoned when the largest dose, of 30 cc., resulted in

immediate collapse and shock. The vision in the right eye was at first blurred. A persistent bruit synchronous with the pulse was heard over the nonpulsating right eye globe. Exophthalmometer readings showed the appearance of exophthalmos, 28 mm. for the right eye and 23 mm. for the left eye. X-ray films of the orbit (Dr. Raymond Pfeiffer of the Institute of Ophthalmology) showed an advance of the area of orbital obstruction (fig. 4) as well as destruction of the base of the skull, forming a large defect at the orifice of the right carotid canal merging with the foramen lacerum. The changes in the region of the sella were further increased (fig. 1).

In view of the advance of the aneurysm, further ligation of the carotid arteries was carried out in four stages by Dr. J. M. Hanford of the Second surgical division. The first stage was done, February 24, by ligation of the right external carotid and superior thyroid arteries; the second stage, April 7, by partial occlusion by a Matas-Allen band of the common carotid artery; the third stage, April 15, by ligation of the left external carotid and left superior thyroid arteries, and the fourth stage, April 26, by an attempt at complete occlusion of the left common carotid artery, but immediate loss of consciousness prevented this. On June 1 the procedure was completed uneventfully, two years and two months after the first symptom.

The vision in the right eye, which had been blurred on entry, was noted to be absent May 1, with blurring of vision on the left. The patient's food intake ranged from 500 to 1,300 calories every day, averaging about 800 calories. The blood pressure ranged from 88 systolic, 68 diastolic, to 112 systolic, 84 diastolic, but was on the low side at discharge at the end of June 1938, at which time the patient's weight was 98 pounds (44.5 Kg.). Headaches were less severe and vomiting had mostly ceased, but weakness and a chalky pallor persisted. There was no return of the menses.

Third Admission to the Presbyterian Hospital (from Aug. 2 to 10, 1938).—The patient was admitted for a check-up and also because of eponychia of both great toes, one and one-half months after operation. There was a gain in weight of 8 pounds (3.6 Kg.). The patient was bedridden but without symptoms except for pain in the upper part of the back left side of the neck and the suboccipital region for one-half hour daily. Blue spots were noted daily and two episodes of blurred vision. The menses had not returned. There was optic atrophy of the right disk.

Improvement continued. By October 22, four months after the last operation, she had gained 21 pounds (9.5 Kg.) and weighed 127 pounds (57.6 Kg.). The basal metabolic rate was —23. The visual fields, however, in November showed marked impingement of the left temporal field of vision and no light perception on the right.

Fourth Admission to Presbyterian Hospital (from Dec. 6 to 23, 1938).—This admission was arranged to check again the status of the patient in view of her improvement. She now complained that the previously noted left suboccipital pain was steady throughout the day, worse on awakening.

Physical examination revealed the same conditions as before with the same striking pallor. There was a definite gain in weight, so much so that the patient now looked slightly overweight. The blood pressure was 100 systolic, 70 diastolic.

X-ray films of the skull (fig. 2) and of the orbit (fig. 4) were interpreted by Drs. Dyke, Swenson and Ball as indicating growth of the aneurysm, despite the ligation of both common carotid arteries. The aneurysm was noted to be eroding into the sphenoid sinuses. The likelihood of infection or rupture from this development made further attack on the aneurysm imperative. Electrothermic coagulation of the aneurysm by the introduction of a wire into the lumen of the aneurysm was proposed. In view of the decided degree of hypophysial insufficiency, it was felt that the patient would not be able to stand the trauma of a craniotomy. It was decided to insert the wire into the aneurysm through the orbital defect on the right. The patient went home for three weeks, to return for this procedure.

Fifth Admission to the Presbyterian Hospital (from Jan. 20 to March 11, 1939).—Jan. 21, 1939, two years and nine months after the first symptom, wiring of the aneurysm was carried out by Dr. Blakemore and the procedure on the eye by Dr. W. P. McGuire of the Institute of Ophthalmology. The technic follows that described previously.[10] The operative note follows: Under procaine hydrochloride anesthesia an incision was made through the lateral canthus of the right eye. Anesthetic solution was introduced into the orbital tissues. The eye was displaced medially. This gave access to the aneurysm, which had eroded the posterior orbit. Thirty feet of No. 34 gage coin silver enameled wire was introduced into the aneurysm through a special needle. The velocity of blood flow through the aneurysm was measured and found to be low. The wire was heated to an average temperature of 80 C. for a total of forty seconds. The aneurysm no longer bled when the needle was cleared at the conclusion of the operation.

Following operation there was progressive diminution of the vision of the left eye. One week after operation the pupil became fixed in dilatation with amblyopia and loss of the pupillary reflex. The fundus was negative at first but optic atrophy soon supervened. Other complications were the development of mild dehydration in the second week and in the third week the sitating suturing of the right eyelid by Dr. McGuire, a proappearance of a pinpoint corneal perforation on the right, neces-

Fig. 5.—Anteroposterior view of skull, April 13, 1939, showing relation of aneurysms to defect in posterior wall of right orbit.

cedure which proved successful in combating the threatened infection. The patient was discharged three months after operation weighing 115 pounds (52 Kg.), but she was readmitted one month after this because of the severity of pain in the left suboccipital area of the neck and shoulder.

Sixth Admission to the Presbyterian Hospital (from April 10 to 28, 1939).—The right eyelids were well closed and the condition of the eye was satisfactory. The left fundus showed atrophy of the nerve head with small shrunken arteries. X-ray examination of the skull (Dr. H. H. Kasabach) revealed some further destruction of the posterior clinoid processes. X-ray examination of the cervical spine showed no dilatation of the vertebral canals to account for the pain.

On laboratory examination the basal metabolic rate was —31 and the fasting serum cholesterol was 209 mg. per hundred cubic centimeters.

Procaine hydrochloride and two days later benzyl alcohol 10 per cent were injected into the spinal dorsal ganglions of the second, third and fourth cervical vertebrae, with relief of pain. The second injection was followed by a hysterical episode that lasted two days. It was noted that for four days after the operation the left side of the face to the midline was flushed

in contrast to the previous marked pallor; skin temperatures, as the flush was subsiding, were equal on the right and left, however. Suboccipital pain was relieved by the injections made into the dorsal ganglions.

Seventh Admission to the Presbyterian Hospital (from June 6 to 13, 1939).—This admission was necessitated by a cellulitis of the right side of the face and neck following extraction of two lower molars a week before. Recovery was uneventful.

July 8, six months after wiring of the aneurysm, x-ray examination of the skull showed no further change (fig. 3).

Eighth Admission to the Presbyterian Hospital (from Oct. 22 to 31, 1939).—This admission was arranged to check the patient's progress. She was now out of bed from one-half to one hour every day, though glad to remain in bed the rest of the day. She had learned braille and was mentally alert, interested and in good spirits. Her appetite was described as poor by the family. The menses had still not returned. There was no nausea or vomiting. Physical examination was unchanged.

X-ray examination of the skull (Dr. Dyke) showed no advance of the area of bone destruction since April, six months before (figs. 3 and 5). The basal metabolic rate was —28. The dextrose tolerance test fasting was 102 mg. per hundred cubic centimeters, one-half hour 143 mg., one hour 124 mg., two hours 105 mg. and three hours 100 mg.

A program of increasing activity was outlined and the patient was urged to get out of bed more and more. During her stay a tooth was pulled without complication.

Oct. 15, 1940, twenty-two months after the wiring, the patient weighed 140 pounds (63.5 Kg.), was ambulatory and relatively improved except for pain in the left eye occasionally. Amenorrhea persisted.

COMMENT

An aneurysm of the internal carotid artery within the skull was treated by wiring and electrothermic coagulation according to the method of Blakemore and King. The aneurysm was progressive despite ligation of both common carotid arteries. The situation was further complicated by the syndrome of Simmonds' cachexia due to destruction of the anterior hypophysis within the sella by the aneurysm. To date the patient has survived twenty-two months since the wiring, although the area of destruction from the aneurysm, at that time and now, measures roughly about 6 by 6 by 7 cm. Progression of the area of destruction has not occurred in the past sixteen months.

Before the wiring procedure, blindness with optic atrophy was present on the right. There was also blurring of vision and a diminution of the temporal field of vision of the left eye. Following the operation the remaining vision was lost on the left with subsequent optic atrophy. Pressure on the optic nerve following an increase in the size of the wall of the aneurysm from postoperative edema could account for this result. Swelling has been observed to occur in the walls of aortic aneurysms so treated. If this interpretation is correct, the edema might well have been avoided with two precautions. First, an x-ray film taken during the procedure, after the insertion of 2 feet of wire, would have outlined the active portion of the aneurysm. This would have afforded a more accurate guide for determining the amount of wire to be introduced than the estimate made from the area of bone destruction. Thus, the introduction of so much (30 feet) wire would have been prevented. Second, heating the wire to 70 C. for a few seconds is enough to deposit a protein coagulum on the wire adequate for clotting but with the production of less edema than after a temperature of 80 C. for forty seconds.

The possibility that propagation of the thrombus established within the lumen of the artery may have accounted for the loss of vision cannot be ruled out. However, such a mishap has not followed wiring of any aneurysm of the aorta that has been so treated.

The wire was introduced into the aneurysm through the bony defect in the orbit because of the advanced degree of hypophysial insufficiency. Any extensive surgical procedure, such as craniotomy, is ruled out in these cases by the overwhelming probability that shock will result from the least trauma. However, when the aneurysm has not caused hypophysial destruction, craniotomy and insertion of the wire under direct vision is naturally to be preferred.

To date, the syndrome of destruction of the anterior hypophysis has not been much alleviated in this case. The enormous size of the aneurysm makes the possibility small that there is much surviving hypophysial tissue or that there will be much decrease in the pressure in the sella. The ineffectiveness of substitution therapy by thyroid, adrenal cortex extract or anterior hypophysial growth extracts should be noted. The toxicity of hypophysial extracts when nearing adequate dosage and the ease with which hyperthyroid symptoms can be produced by thyroid should be stressed. Of incidental interest also is the appearance of flushing of the face following injection of the dorsal ganglions of the second, third and fourth cervical vertebrae. This would indicate that the marked pallor, first described by Simmonds and not due to anemia, is vasospastic in origin.

The procedure of wiring and electrothermic coagulation was applied in the treatment of an aneurysm of the internal carotid artery within the skull. The patient has survived since, fourteen months to date. This case is too complicated, because of the previous internal carotid artery ligation and the presence of advanced hypophysial insufficiency, to judge the merits of wiring as a method of treatment of this type of aneurysm. Nonetheless, the operation has been accomplished successfully under these most adverse circumstances. This procedure is therefore presented to encourage its trial as a new, simple and probably effective operative approach to the treatment of aneurysms of the internal carotid artery.

SUMMARY

1. The wiring procedure of Blakemore and King for the treatment of aneurysms of the aorta has been extended to the treatment of aneurysm of the internal carotid artery within the skull.

2. An aneurysm of the right internal carotid artery within the skull, progressive despite ligation of both common carotid arteries and complicated by Simmonds' cachexia, has been successfully treated by wiring.

3. The pallor of the face associated with the syndrome of Simmonds' cachexia would seem to be vasospastic in origin.

4. Substitution therapy in Simmonds' disease is ineffective at present.

620 West 168th Street.

Tuberculosis Reactors Decrease.—In a ten year tuberculin testing program in rural and town schools in four counties in Minnesota the percentage of reactors has fallen from 14.1 to 6.75. The decrease is attributed to a careful follow-up of all positive reactors, with an intensive search for the source of the infection. Contact with open cases of tuberculosis was broken by hospitalization of the case or placing the children in a home free from tuberculosis. All teachers and school personnel were included in the plan.—National Tuberculosis Association Clip Sheet, February 1941.

THE INTESTINE IN RADIATION SICKNESS

I. THE GROSS EFFECT ON THE SMALL INTESTINE OF PROTRACTED DEEP PELVIC IRRADIATION

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DURHAM, N. C.

As the colon has frequently been studied with the intention of finding the cause of the diarrhea seen in radiation sickness and the findings have been inconclusive, and as diarrhea has been shown to be frequently due to disease of the small intestine,[1] I decided to investigate grossly the small intestine of a series of patients receiving heavy, long-protracted doses of high voltage roentgen therapy over the pelvis, using portals large enough so that there is direct irradiation of a portion of the small intestine.

LITERATURE

Several workers, notably Warren and Whipple [2] and Martin and Rogers,[3] have overradiated the abdomen in experimental animals and studied the pathologic change produced in the bowel. This work has given physicians a background of knowledge of the nature of the radiation injury, but unfortunately integration between it and the effects of therapeutic doses in man is practically impossible because of variations in susceptibility and the fact that, in treatment of the human patient, one endeavors to stop short of the damaging dose.

In such pathologic studies of the injured human bowel as have been made by Corscaden, Kasabach and Lenz,[4] Healy [5] and Cathie,[6] the injuries have been generally acknowledged to be manifestations of an idiosyncrasy to irradiation, or else manifestations of local overradiation of an immobile loop of bowel, fixed in position by peritoneal adhesions or extension of a tumor. Patients showing actual intestinal damage after therapeutic doses of radiation are all rare enough to merit reporting. Obviously pathologic examination of the bowel in patients showing normal response to a series of radiation treatments is not justified to satisfy experimental curiosity, and another method of examination must be used.

The examination of the small intestine by the use of ingested opaque substances is, of necessity, gross and in no way approximates the accuracy of the pathologic study. It surely will, however, at some future date be possible at the time of laparotomy or necropsy after death from some intercurrent disease to obtain pathologic material showing the normal response of the bowel to a heavy series of therapeutic radiation treatments. According to Martin and Rogers [7] and Desjardins [8] the reaction of radiation sickness is nonspecific and differs widely from the specific reaction seen in the grossly overradiated bowel.

The pathologic changes [9] in the overradiated bowel are:

1. Increased tone with spastic contraction.
2. Mucoid degeneration, vacuolization and desquamation of the epithelial cells, beginning in the cells overlying the lymph follicles and lining the crypts and later extending into the cells covering the villi.
3. Atrophy of the villi.
4. Hyperemia and edema.
5. Occasional mucosal ulceration.
6. Bacterial accumulation on the denuded surfaces.
7. Infiltration of leukocytes.
8. Ultimate mucosal regeneration or proliferation of connective tissue to replace the destroyed cells.

Martin and Rogers [3] have shown that a certain extent of these changes is entirely compatible with life, and it may be that radiation sickness is a manifestation of these changes in a mild degree. Warren and Whipple [10] have shown that no overwhelming bacterial invasion occurs even with widespread ulceration, which seems to indicate that the symptoms of radiation sickness are not due to passage of massive numbers of bacteria through an injured mucosa of increased permeability. It is not the purpose of this paper to discuss the etiology of radiation sickness, or actual intestinal injury, as there are numerous hypotheses, none of which is conclusive, including the liberation of toxic products from irradiated lymphoid tissue,[11] actual metabolic changes,[12] the psychic element, the production of ozone in the treatment room and the release of a histamine-like substance from irradiated tissues,[13] to mention only a few.

Characteristic appearance of intestine after barium sulfate meal.

SELECTION OF CLINICAL MATERIAL

For a time, all new patients with carcinoma of the cervix coming under my care at the clinic of Duke Hospital were subjected to a preliminary study of the

From Duke Hospital and Duke University School of Medicine.

Read before the Section on Radiology at the Ninety-First Annual Session of the American Medical Association, New York, June 12, 1940.

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small intestine before the institution of therapy. From these were selected 10 patients, in whom careful study had revealed no organic lesion of the gastrointestinal tract. These received the usual dose of radiation (with slight individual variations for physical condition of the patient and stage of the disease), and the small intestine was reexamined at the end of a protracted series of radiation treatments. None of these patients had received any radium therapy previously.

TECHNIC OF IRRADIATION

The 10 patients selected all received between 1,700 and 2,200 roentgens from each of two anterior, two posterior and two lateral portals, all 10 by 15 cm. With two exceptions, the rays were generated at 400 kilovolts, and 5 milliamperes, filtration of 4 mm. of copper, with a half value layer of 5 mm. of copper being used. In the 2 remaining cases, the rays were produced at 200 kilovolts and 25 milliamperes, with filtration of 1 mm. of copper, and a half value layer of 2 mm. of copper. In addition, 3 of the patients received around 5,000 roentgens intravaginally, with 500 roentgen doses interspaced after every third external treatment, the rays produced at 200 kilovolts and 25 millamperes, with filtration of 1 mm. of copper and a half value layer of 2 mm. of copper.

In every case the external irradiation was given as follows, in a modification of the method used by Healy at Memorial Hospital:

1. Each day two opposing portals are treated, the rays always being directed exactly at right angles to the plane of the body parallel to the top of the treatment couch.
2. The anterior and the posterior portals on each side meet in the midline of the body, and no attempt is made to incline the beam and cross fire the cervix.
3. Each of the first three days, each of two opposing portals receives 150 roentgens.
4. Each of the second three days, each of two opposing portals receives 200 roentgens.
5. Each of the third three days, each of two opposing portals receives 250 roentgens.
6. Daily thereafter each of two opposing portals is given 300 roentgens until the desired total dose has been administered. (For economic reasons, the daily dose has been increased to 350 and even 400 roentgens per portal in a number of cases without undue effect, but the usual routine is to continue at 300 roentgens per portal until the desired total dose is reached.)

The patients, equally divided among white persons and Negroes, were all of farming families, and all withstood their irradiation without undue discomfort. No drugs were prescribed to alleviate any symptoms of radiation sickness which appeared, and in only 1 case did the diarrhea approach moderate severity, with three stools a day. (I recognize that nausea is likely to be a more prominent feature among a more exacting group of patients. However, this same general routine is followed at Duke Hospital in the treatment of every patient with carcinoma of the cervix, and no patient has yet shown any lasting injury, and in no case has the radiation sickness been of sufficient severity to cause more than temporary interruption of therapy. This intensive method of therapy is aimed primarily at eradication of the more radioresistant metastases to broad ligaments, in the belief that intracervical radium and intravaginal roentgen irradiation are highly effective in destroying the primary tumor in the cervix.)

TECHNIC OF EXAMINATION OF THE SMALL INTESTINE

It has been shown by several workers, Golden,[1] Menville and Ané,[14] Pendergrass and his associates,[15] that in examination of the small intestine the use of a standard meal and a standard technic of examination is necessary to afford a valuable comparison. Accordingly, none of these patients had any chronic medication of any type. To forestall any possible effect on the bowel from carbohydrate, fat, or flavoring materials, I used 3 ounces (85 Gm.) of barium sulfate[16] in 6 ounces of water, which the patient was instructed to swallow rapidly. The esophagus and stomach were examined fluoroscopically at the time of the meal. The patient was allowed to sit for a fifteen minute interval, after which she was examined roentgenoscopically in the prone and supine positions and a roentgenogram was taken in the supine position, to show the duodenojejunal juncture and the upper jejunum, according to the technic of Golden.[17] Good quality roentgenograms were obtained in the average patient with 90 kilovolts, 100 milliamperes and one-fourth second exposure, the Bucky diaphragm being used at a distance of 25 inches.

At hourly intervals after the meal, the patients were again examined with the fluoroscope in supine and prone positions, and roentgenograms of the prone patients, centered over the filled area of bowel, were made, the same technical factors mentioned previously being used. In every patient studied in this investigation at the time of the first examination the meal had reached the ileocecal valve and started into the cecum by the end of two hours. Accordingly in the majority of cases the examination was not continued beyond the end of the two hour period.

NORMAL APPEARANCE OF THE SMALL INTESTINE

The appearance of the various segments of small intestine in every case selected for complete investigation was essentially the normal one that has been well described by previous workers, including Forssell,[18] Golden[1] and Pendergrass and his associates,[15] and will be mentioned only briefly.

The duodenum showed a characteristic "fish bone" appearance, with high and fairly wide mucosal folds. Its lumen is from 3 to 4 cm. in diameter.

The upper jejunum showed a slightly narrower lumen, with much finer but equally high folds, producing the characteristic "feathery" appearance. As the meal proceeded to the lower jejunum, the folds gradually became slightly lower and wider and there was slight further narrowing of the lumen.

The characteristic appearance of the ileum shows a lumen well under 3 cm. in diameter, with folds not over a millimeter or two high and almost a centimeter wide. In some phases of peristalsis the ileum assumes the "stacked coin" appearance, with folds as narrow as those of the duodenum but not nearly as high, and frequently it shows longitudinal striations.

14. Menville, L. J., and Ané, J. N.: X-Ray Study of the Passage of Different Foodstuffs Through the Small Intestine of Man, Radiology **18**: 783 (April) 1932.

15. Pendergrass, E. P.: The Small Intestine, J. A. M. A. **107**: 1859 (Dec. 5) 1936. Pendergrass, E. P.; Ravdin, I. S.; Johnston, C. G., and Hodes, P. J.: The Effect of Foods and Various Pathological States on the Gastric Emptying and the Small Intestinal Pattern, Radiology **26**: 651 (June) 1936. Ravdin, I. S.; Pendergrass, E. P.; Johnston, C. G., and Hodes, P. J.: The Effect of Foodstuffs on the Emptying Time of the Normal and Operated Stomach and the Small Intestinal Pattern, Am. J. Roentgenol. **35**: 306 (March) 1936.

16. Mallinckrodt chemically pure barium sulfate was used.

17. Golden, Ross: Personal communication to the author.

18. Forssell, G.: The Mechanism of Movement of the Mucus Membrane of the Digestive Tract, Am. J. Roentgenol. **10**: 87 (Feb.) 1923.

In normal persons the barium has a tendency to remain in a continuous stream, with only occasional empty segments interrupting the continuity, these due to recent peristaltic contraction.

In the duodenum and jejunum peristaltic contractions are massive, usually involving a segment 5 to 10 cm. in length. In the ileum the areas of peristalsis are much less extensive, and each wave usually involves only about 1 cm. of the bowel.

POSTRADIATION CHANGES IN THE SMALL INTESTINE

The findings in the studies of the small intestine made at the end of the protracted series of therapy are graphically illustrated in the accompanying table. In no case was there any demonstrable change in the duodenum or jejunum, both of which lay almost entirely outside the irradiated areas. The two most common changes were segmentation of the barium stream and flattening of the pattern of the ileal mucosa. Segmentation was observed in all but 1 case and changes in pattern, varying from a slight to a marked degree, were found in 8 of the 10 cases. A decrease in motility was shown in seven instances, and an absolute diminution in the diameter of the ileal lumen due to spastic contraction was shown in an equal number.

There was no apparent quantitative variation in effect obtained by slightly more than 20 per cent variation in dosage, by the use of 200 kilovolts and 1 mm. of copper as compared to 400 kilovolts and 4 mm. of copper, or by the supplementary use of a heavy dose of intravaginal irradiation at 200 kilovolts and 1 mm. of copper.

Effects of Radiation Therapy: Clinical Summary

No.	Age	Race	Para	L. of N. Stage	Therapy (6 External Ports)	Previous Gastrointestinal Symptoms	First Ileal Study	After Therapy: Nausea	After Therapy: Diarrhea	Changes in Small Intestine After Therapy: Duodenum	Jejunum	Ileum	Segmentation	Diminished Motility
1	57	N	0	IV Adeno.	2,150 r/port 400 KV, 4 mm. Cu 4,500 4 vaginal 200 KV, 1 mm. Cu	0	Negative	+	0	0	0	Narrowing, flattening of pattern	+	+
2	31	W	i	II Sq.	2,000 r/port 400 KV, 4 mm. Cu 5,000 r vaginal 200 KV, 1 mm. Cu	0	Negative	+	0	0	0	Narrowing, flattening of pattern	+	0
3	58	W	vii	III Sq.	2,000 r/port 400 KV, 4 mm. Cu	0	Negative	+	+	0	0	Narrowing, flattening of pattern	+	+
4	39	N	i	II Sq.	1,800 r/port 400 KV, 4 mm. Cu	0	Negative	0	0	0	0	0	+	0
5	38	W	vii	III Sq.	1,800 r/port 200 KV, 1 mm. Cu	0	Negative	+	0	0	0	Narrowing, flattening of pattern	+	+
6	40	W	iii	III Sq.	1,700 r/port 200 KV, 1 mm. Cu	0	Negative	+	0	0	0	Narrowing, flattening of pattern	+	0
7	66	W	xi	III Sq.	2,000 r/port 200 KV, 1 mm. Cu	0	Negative	+	0	0	0	Narrowing, slight flattening	+	+++
8	35	N	vi	IV Sq.	2,000 r/port 400 KV, 4 mm. Cu 5,000 r vaginal 200 KV, 1 mm. Cu	0	Decided hypermotility	0	0	0	0	Flattening	++	++++
9	60	N	iv	IV Sq.	2,000 r/port 400 KV, 4 mm. Cu	0	Negative	+	0	0	0	Narrowing	+	+
10	39	N	v	III Sq.	2/100 r/port 400 KV, 4 mm. Cu	0	Negative	+	0	0	0	Loss of pattern	0	+

COMMENT

In the light of this study, it appears that the diarrhea from deep pelvic irradiation is due to changes in the large rather than in the small intestine, as all demonstrable change in the small intestine would tend to produce an opposite effect. This would not necessarily hold true in the case of irradiation heavy enough to produce permanent damage to the small intestine.

Early in this investigation, I conceived the opinion that the syndrome of radiation sickness might be due to a failure of the impaired mucosa to absorb food materials, with the production of an actual deficiency state, but this does not seem to be true when therapeutic doses of radiation are used. The findings in the small intestine in the common deficiency states tropical and nontropical sprue, have been ably described by Golden [1] and Snell, Camp and Watkins [19] and by Golden [1] and Mackie, Pound, Miller and Rhoads,[20] and are in many ways similar to, though more extensive than, the changes herein described. In both of these deficiency diseases, segmentation of the barium stream and hypomotility of the small intestine are prominent features. However, the acute mucosal changes are observed more commonly in the duodenum and the jejunum than in the ileum, although there is the same loss of pattern and flattening of the mucosal folds seen in my cases. The mucosal change in the bowel of patients with deficiency diseases has been considered [21] to be due to edema, going on to actual atrophy and destruction, though cases have been described [16] which show no edema but round cell infiltration of the submucosa. It is highly likely that edema is the cause of the mucosal change in the 10 cases described previously. Finally, the patient with the true deficiency state frequently [22] presents stubborn colitis, which was not seen in this series of cases even after tremendous doses of irradiation.

Further investigation of the length of time required for the small intestine to return to a normal appearance, the effect of sickness-producing doses of radiation

19. Snell, A. M., and Camp, J. D.: Chronic Idiopathic Steatorrhea: Roentgenologic Observations, Arch. Int. Med. **53**: 615 (April) 1934. Snell, Camp, and Watkins.[21]

20. Mackie, T. T., and Pound, R. E.: Changes in the Gastrointestinal Tract in Deficiency States, with Special Reference to Small Intestine: Roentgenologic and Clinical Study of Forty Cases, J. A. M. A. **104**: 613 (Feb. 23) 1935. Mackie, Miller and Rhoads.[23]

21. Snell, A. M.; Camp, J. D., and Watkins, C. H.: Nontropical Sprue, Proc. Staff Meet., Mayo Clin. **10**: 177 (March 20) 1935.

22. Mackie, T. T.; Miller, D. K., and Rhoads, C. P.: Sprue: Roentgenologic Changes in the Small Intestine, Am. J. Trop. Med. **15**: 571 (Sept.) 1935.

directed to other parts of the body than the lower abdomen and the gross postirradiation change in the large intestine is now under way, and reports will be made in the near future.

CONCLUSIONS

1. In a series of patients with carcinoma of the cervix, examinations of the small intestine made before and after a protracted series of high voltage roentgen irradiations of the pelvis showed several characteristic postirradiation changes.
2. The duodenum and jejunum were not grossly altered by high voltage irradiation over the pelvis.
3. The ileum showed the most marked changes, which included segmentation of the barium stream, flattening of the mucosal pattern, diminished motility and narrowing of the lumen.
4. The ileal change appeared to be independent of more than a 20 per cent variation in total dose, of the use of 200 or 400 kilovolts, of medium or heavy filtration and of the employment of supplementary lightly filtered intravaginal radiation in rather heavy doses.
5. There is no direct roentgenologic evidence that the syndrome of roentgen sickness bears any relationship to the deficiency states.

ABSTRACT OF DISCUSSION

DR. ROSS GOLDEN, New York: The occurrence of disturbances in the intestine, manifested by mild or even marked diarrhea, has been the experience of practically all radiotherapists who have had occasion to irradiate the abdomen for malignant disease. Dr. Wallace, as far as I know, is the only one who has taken the trouble to investigate the small intestine while this procedure was going on. I think he deserves our gratitude. There are many things that cause disturbance in the physiology of the small intestine which may be manifested on roentgen examination. The pathology of these disturbances has not been very well worked out. One writer in Hencke and Lubarsch's monumental handbook devotes three fourths of a page to tell how difficult it is to determine the nature of these disturbances. The more one takes the trouble to observe the small intestine in ordinary routine work, the more one realizes that it is upset frequently in all sorts of conditions. Not only is Dr. Wallace's investigation of importance as far as roentgen ray sickness goes, but it is also important in that it may be the means of throwing light on the fundamental nature of disturbances in the small intestine which are seen in other conditions. There undoubtedly will be opportunities for eventual pathologic studies of the intestine in such cases. I hope that Dr. Wallace will have the opportunity to conduct follow-up studies in these cases. I mean studies of the small intestine one year, two years or five years after heavy irradiation, such as is given for carcinoma of the uterus. It may be that it will be demonstrated that the intestine returns completely to normal; it may be that there will be persistent changes, and the nature of the pathologic condition which may be shown at necropsy will be of importance in evaluating the disturbances not only in these cases but in routine studies that are being made with more and more frequency of the small intestine.

DR. VIRGIL H. MOON, Philadelphia: I wish to ask whether some of the cases presented more severe symptoms than diarrhea, and if so, what the character of the symptoms was. Also, what was the time interval between the exposure and the onset of the symptoms?

DR. MORTON L. LEVIN, Albany, N. Y.: I should like to ask Dr. Wallace whether there is any possibility that the effects which he has described may be due to emotional changes rather than to purely physical or physiologic causes.

DR. WILLIAM STUART WALLACE, Durham, N. C.: In answer to Dr. Moon's question, I would say that nausea is a fairly common occurrence in patients treated under this method. It is not a constant occurrence, but it occurs in 60 to 75 per cent of the patients, and, as so often is the case with radiation nausea, in some of the patients it develops immediately on the first exposure to the room, but in the majority of them it takes from ten days to two weeks to develop. At no time did we consider that the nausea was of such severity as to warrant stopping the treatments of any of these patients, and it is extremely rare in the course of our ordinary irradiation, to have to stop for a few days in treating a cervical carcinoma because of nausea. In answer to Dr. Levin, all these patients were of the type seen in North Carolina, who are considerably more stolid than the average person in the North. These patients are all of farming families. None of them seemed to be of any particularly emotional makeup.

END RESULTS OF RADICAL SURGERY OF THE GASTROINTESTINAL TRACT

AS SEEN BY THE GASTROENTEROLOGIST

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Diseases of the gastrointestinal tract involve problems which require both the single handed skill of the surgeon, as in acute appendicitis, and the cooperative experience and judgment of the gastroenterologist and surgeon, as in the ulcerative diseases. The era of competitive claims from these two medical groups has passed; each needs the other and each gives wholehearted acclaim to the other's accomplishments in the difficult problems of such diseases as peptic ulcer, ulcerative colitis and cancer.

An evaluation of attainments in any form of therapy requires constant surveillance of end results, and in this function the gastroenterologist with his close follow-up contacts may rightly be a guiding influence. This is especially true since any group of statistics concerning end results in disease of the gastrointestinal tract must fluctuate unfavorably because of the tendency of such diseases as ulcer to recur, sometimes many years after operative or medical treatment.

A permanent place in the therapeutic procedures is acquired by either medical or surgical treatment only if it fulfils expectations based on the three following criteria:

1. Does it cure the disease and why?
2. Is it the least radical procedure which can be used to cure the condition?
3. By curing the disease, does it sufficiently preserve physiologic function to keep the balance of cure versus disease on the cure side—and this from both the patient's and the physician's standpoint?

In the earlier days of radical surgery of the stomach and intestines, the technical difficulties produced such high mortality that no conscientious surgeon or internist advised such a procedure without impelling indications. Nowadays, with relative safety resulting from increased technical skill and improved preoperative and postoperative care, it is more than ever necessary to have no doubts of the indications and, furthermore, to use an operation which has been as firmly established as possible by good results. For even though safety need no longer be the paramount consideration, the well ordered scheme of nature provided for certain functions which are undoubtedly best performed by the whole stomach and the unabridged intestine.

From the Department of Gastro-Enterology, the Lahey Clinic.
Read before the Section on Gastro-Enterology and Proctology at the Ninety-First Annual Session of the American Medical Association, New York, June 13, 1940.

The operations to be considered in this appraisal are subtotal or total gastrectomy and resections of the small and large intestines. The conditions for which they are done necessarily influence the evaluation of results, inasmuch as surgical intervention for cancer where no medical treatment has efficacy may be regarded as justifiable to prolong life even on a less than normally comfortable basis. Recurrence of the disease is anticipated, and the surgical removal of the original lesion is intended as a day to day measure, justified by the patient's right and desire to live as long as possible. Likewise, a destructive disease such as ulcerative colitis is often so desperate that radical surgical intervention or colectomy, even with imperfect results, may be regarded as justifiable and desirable. In this disease, however, the internist is confronted with two tormenting factors: first, that with the uncertain and probably complex etiology a simple medical cause may be overlooked and an important organ unnecessarily sacrificed, and second, that this sacrifice may be unnecessary because of that apparently spontaneous improvement which occasionally occurs in this disease just as radical surgical intervention is being considered. Under these conditions necessarily imperfect results, while justified in desperate circumstances, should be avoided as long as the road between fatality and medical cure does not become too precarious. Peptic ulcer, on the other hand, is a disease which, when uncomplicated or even with the milder complications, should be amenable to medical treatment, and radical surgical intervention for this disease, even if productive of good results, should be done only with impelling indications. This fact is, of course, now widely acknowledged, and differing policies by various persons and groups are the results of differences in the appraisal of indications and results. For this reason, especially in this disease, frequent estimates of indications and results are an important practical help toward better therapy and even toward a clearer understanding of the etiology of the disease. In this review, an unselected group representing each type of case requiring radical surgical intervention was used.

The mortality of radical surgical intervention, while obviously the most important consideration in a discussion of results of treatment, has so often been discussed in relation to radical gastrointestinal operations that it will not be considered in this paper. This discussion concerns the living patient who has had resection, and attempts to cover two questions: (1) Has the operation relieved the condition for which it was done, and (2) is the patient gastrointestinally comfortable?

Two hundred and sixty-two patients were studied, 120 of whom had had resection of the stomach, 22 resection of the small intestine and 120 resection of the large intestine.

Resection of the stomach was done in these 120 patients for three conditions: in 91 for peptic ulcer, in 25 for carcinoma and in 4 for benign lesions not ulcer.

The results of radical operations for peptic ulcer will be considered first. Resection in this disease was done for three reasons: (1) intractability, (2) multiple hemorrhages and (3) obstruction unrelievable by medical management.

There were 49 cases of intractable ulcer—20 of duodenal, 17 of gastric and 12 of gastrojejunal ulcer. In most instances of these intractable duodenal ulcers it was assumed after laparotomy that the ulcer failed to respond because of its anatomic location on the posterior wall of the duodenum and penetrating into the head of the pancreas. In some of these cases it was impossible surgically to remove the lesion itself. The 19 patients with gastric ulcer had resection chiefly because there was a reasonable suspicion of future malignancy because of recurrence, or of present malignancy because of failure to heal. The gastrojejunal ulcers, mostly jejunal, occurred a few months to many years after posterior gastroenterostomy and, like the duodenal ulcers, were thought to have resisted medical treatment because of their location and to be a menace because of the danger of gastrojejunocolic fistula, which in 2 cases had already actually developed.

The commonest symptoms suggestive of functional derangement after gastric resection are a sensation of fulness, sometimes to the point of nausea, regurgitation or vomiting directly after eating, loss of appetite and a general sensation of distention and distress throughout the abdomen. There is occasional diarrhea. When a definite jejunitis or new ulcer has occurred, the symptoms are typical ulcer symptoms. Of the 20 patients whose duodenal ulcers were resected, 8 were symptomless one to ten years postoperatively, while 13 patients had discomfort ranging from postprandial distention to vomiting and diarrhea, and in 5 of these jejunitis or jejunal ulcer was suggested both clinically and by roentgen examination. In none of these cases was free hydrochloric acid found after a test meal, but its absence without fluoroscopic control of the position of the tube in the resected stomach is not absolute evidence of a lack of secretion.

The 17 patients with intractable gastric ulcers who had resection are, up to now, much more satisfactory from the standpoint of good results. Eleven were found to have no digestive symptoms, while 6 had mild indigestion, in most cases ascribed to careless diet. None of these patients was known to have free hydrochloric acid after operation. It must be noted that while the ulcers of these patients are classified as intractable, the majority of them were resected because the complete healing of the ulcer had not occurred quickly enough to allay suspicion of malignancy. Their benign character as proved microscopically suggests that at least some of them might ultimately have healed, even if no operation had been done.

Of the 12 patients with intractable gastrojejunal ulcer who had lysis of the gastroenterostomy and subtotal resection, 4 were found to be symptomless one to ten years postoperatively; in the other 8 there had developed in one to nine years after resection symptoms varying from mild abdominal distress and distention to typical ulcer distress. Two had hemorrhages, one and four years respectively after resection, although no hemorrhage had occurred from the original ulcer. One had a second subtotal gastrectomy with excision of a second gastrojejunal ulcer, and 2 had successful medical treatment for what were thought to be recurrent gastrojejunal ulcers. Free acid, after test meals, in the gastric juice of 4 of these patients with recurrent ulcer was 12, 18, 26 and 28.

While the groups of cases just described are too small to permit of definite conclusions, it is rather striking that the surgical treatment of these ulcers follows the same pattern in the matter of end results as the medical

treatment. The gastrojejunal ulcers are the most resistant, the duodenal the next most difficult and the gastric the most satisfactory in results.

The second indication, multiple hemorrhages, was present in 41 cases: 29 of duodenal, 6 of gastrojejunal and 6 of gastric ulcers. Of this group, 6 patients had recurrent hemorrhages after subtotal gastrectomy (five original duodenal ulcers and one original gastrojejunal ulcer). In 4 of the 6 patients there was achlorhydria; the gastric juice of the other 2 showed a free hydrochloric acid content of 39 and 40 respectively. The first postoperative hemorrhage occurred in these patients one and a half to three years after subtotal gastrectomy. Eleven other patients had complaints one to four years later, ranging in severity from an uncomfortable fulness after meals to real ulcer distress. Three of these 11 patients had free hydrochloric acid, after a test meal, of 7, 12 and 79 respectively. The patient with an acid content of 79 had an acute perforation of a jejunal ulcer. The others had achlorhydria (without fluoroscopic control of the position of the tube). Twenty-three patients had no stomach consciousness, although 3 of these symptomless patients had free acid of 17, 20 and 45 respectively.

In this group of patients, on whom resection was done because of multiple hemorrhages, it is again noted those with gastrojejunal ulcer are the least satisfactory, 3 out of 6 having recurrent symptoms; in the duodenal group, 15 of 29 had postoperative symptoms, while the gastric ulcer group was 100 per cent satisfactory. It must again be emphasized, however, that all these groups are too small to allow definite deductions from these facts.

The third indication for resection was pyloric obstruction. There were 19 patients with obstruction, of whom 17 were entirely symptom free one to ten years after resection. Two patients had mild symptoms, but neither had recurrence of the ulcer. Five were known to have achlorhydria postoperatively, and 1 had a free acid content of 14. This group, therefore, showed an almost 100 per cent good result from subtotal gastrectomy. In discussion of this fact, it might be thought that for this indication a less radical operation, such as gastroenterostomy, might be just as effective as this radical procedure, but in my opinion this would not have been true, especially since 11 of these patients were under 50 years of age, with high gastric acidity.

To revert to the three criteria set up at the beginning of this paper, namely: (1) Does this operation, subtotal gastrectomy, cure the disease and why? (2) Is it the least radical procedure possible? (3) Is the cure worse than the disease? I would first again emphasize the fact that the total number of cases is too small to justify conclusions and that no group of statistics regarding ulcer can be considered final as long as the patients are alive. Under these conditions, while no conclusions may be drawn, comment and discussion of these results may be permitted. It is rather striking that hemorrhage and intractability in the duodenal and gastrojejunal ulcers are less easily controlled by subtotal resection than in the gastric ulcer. Since gastric acidity in patients with gastric ulcer is almost always within normal range and in those with duodenal and gastrojejunal ulcer high, it is tempting to assume that this factor plays an important part in postresection results. Even when no new ulcer occurs, it is possible that gastritis or jejunitis, probably associated with this acid factor, produces new symptoms. Only in the individual case can it be determined whether these new symptoms are more unpleasant or serious than those for which operation was done, but if the possibility of previous medical treatment has been exhausted it becomes necessary to give the patient an opportunity for relief and safety with a surgical procedure. This opportunity may involve a relatively high chance of recurrence or some postoperative discomfort, but it must still be given the patient if everything else has failed. The good results in cases of obstruction may also be due to the fact that acid plays a less important role in these cases where the indication for operation has been the relief of the cicatricial end results of ulcer formation and not of the active ulcer.

The second question, "is it the least radical procedure possible for this condition?" is in my opinion to be answered in the affirmative. As time goes on and experience with ulcer accumulates, the number of patients on whom gastroenterostomy and pyloroplasty have been performed who return, often fifteen to twenty years after the operation, with that most distressing of all ulcers, the gastrojejunal, grows steadily larger. In a few patients with more insidious gastrojejunal ulcers there has already developed a jejunocolic fistula; a larger percentage of patients has hemorrhage or perforation—in fact the complications are more numerous than in the simple duodenal ulcer for which operation was done. The complete picture of cases of gastric resection is yet to be unfolded, but with reduction of acid in most cases it can hardly be as disappointing as that of gastroenterostomy.

The third criterion, "is the cure worse than the disease?" involves not only a consideration of the number of recurrences of ulcer after the operation, which has already been discussed, but also a survey of the general condition of those patients who have been relieved of their original disease by extirpation of a large part of what is usually considered an important organ, the stomach. Ivy has recently enumerated six functions of the stomach, the digestive, triturating, reservoir, hemopoietic, bactericidal and absorptive, the last especially for iron and calcium. With a large part of the stomach removed, the small intestine must take up the burden of these functions to a large degree in patients with gastric resection. If the stump of the stomach shows peristalsis and gradual emptying, the reservoir and triturating functions are maintained to a considerable degree, and if there is cooperation of the patient through the substitution of small meals at frequent intervals for infrequent large meals, the subjective symptoms of postprandial fulness and discomfort are avoided. The other functions of the stomach are less easily checked, but in the group of cases in which postoperative liver and iron therapy and careful nutrition were prescribed practically routinely, there appeared to be no serious disturbance in the hemopoietic or absorptive functions—which were likewise assumed to be taken over, at least to some degree, by the small intestine. In 27 of the 91 cases there was some difficulty in maintaining weight and in general no tendency to overweight.

Twenty-five patients who had had subtotal gastrectomy for carcinoma of the stomach, observed one to eleven years after operation, showed a surprising lack of symptoms until loss of appetite indicated metastatic

involvement. Instead of fulness and nausea, as observed in the cases of ulcer resection symptoms possibly suggestive of jejunitis—the only symptom noted was diarrhea. There was practically always a gain in weight before the onset of metastatic involvement. From these facts again it is suggested that the hyperchlorhydria factor absent in gastric ulcer and cancer and present in duodenal and gastrojejunal ulcer, where it may produce an inflammatory condition or new ulcer in the newly invaded jejunum, is still the element incompletely controlled even by this radical operation.

In 1 case, total gastrectomy was performed in October 1937 for leiomyosarcoma. The patient is well, maintains her weight and has had practically no discomfort since the operation.

Of the 4 patients who had had resection of the stomach for benign lesions not ulcer, 1 had chronic hypertrophic gastritis, 1 a gastric diverticulum and 2 leiomyomas. Satisfactory results have been obtained since operation, and the patients have no discomfort.

Resections of the small intestine were done in 23 cases for the following diseases: malignant lesions, 4 cases; regional ileitis, 12; Meckel's diverticulum, 3, and chronic intestinal obstruction, 4. In many cases long segments of this organ were removed. On the whole, there was remarkably little apparent effect on digestive function. Of the 4 patients whose small intestine was resected for malignant ulcers, 2 are entirely symptom free six and eleven years respectively after operation; their nutrition is maintained above normal, and they have had no recurrence. The other 2 have had one and a half and four years respectively of comfortable living but are now beginning to show evidence of recurrence. While the small intestine was intact, even though shortened to a considerable degree, there appeared to be no impairment of function. This fact was also true in 8 of the 12 cases of regional ileitis; these patients obviously enjoyed perfect health after the removal of the diseased segment of intestine which, while it was still present in its diseased form, caused symptoms of toxicity and obstruction severe enough to require surgical intervention. The other four of the twelve patients with regional ileitis had minor postoperative disturbances, 3 having some distention (general abdominal or in the right lower quadrant) and 1 having diarrhea. The three patients on whom resection for Meckel's diverticulum was done were in excellent condition postoperatively. Of the 4 patients operated on for chronic intestinal obstruction, 3 had postoperative symptoms, 1 having been reoperated on and the other 2 having recurrence of pain presumably due to the same mechanical and extrinsic cause, adhesions, for which the operation had to be done originally. One was well and had gained 20 pounds (9.1 Kg.).

In summarizing the clinical impressions of patients who have had resection of the small intestine, it seems apparent that large segments of this organ can be removed without disturbance of its function.

The patients with resections of the colon studied for this paper numbered 120, and the indications were as follows: carcinoma of the right portion of the colon, 25; of the left portion of the colon, 28; of the sigmoid flexure and rectum, 48; ulcerative colitis (colectomy) 15, and diverticulitis (resection), 4.

A large number of these patients were confronted with the inconvenience and handicap (mental and physical) of a permanent artificial abdominal opening. As was to be expected, the physical difficulties of an ileostomy, as in the colectomy cases, resulted in much greater disturbances than were present in the colostomy cases. The mental effects were usually in proportion to the physical, though in some instances related only to the person's temperament. Even the ileostomy was satisfactorily controlled, however, in 11 of the 15 patients operated on for ulcerative colitis, and in all patients but 1 there was an increase in weight which in most instances had to be controlled by a careful dietary regimen. The rescue of such patients from a desperate condition seemed, even to a critical reviewer, a justifiable reason for the radical operation, and when it is further observed that there is also a decided increase in nutrition and a return to full capacity in 11 of these 15 cases, even the most conservative internist must agree that the operation should be done in the desperate cases when there is destruction and polypoid degeneration of the mucosal surface and infiltration of the submucosal layers, or when the toxicity is so profound that recovery appears impossible. There will always remain the important question as to when this state supervenes on that doubtful one where cure by medical treatment may be obtained.

The colon resections done for malignant lesions, whether of the right or left portion of the colon or rectosigmoid, appeared to be entirely justified by the results, if these results are judged by the aforementioned criteria 2 and 3. In other words, cure of the disease is not expected, but physiologic function was adequate and the temporary cure was justified by the comfort of the patients. Twenty-two of the 25 patients who had had resection for lesions of the right portion of the colon showed, in one to six years postoperatively, full capacity for work. There were no digestive disturbances and no anemia, and the only nutritional disturbance was a striking tendency to overweight which predominated in all patients with radical operations of the colon. This fact may be ascribed to the type of diet used by them to reduce the liquid of the intestinal content, which seems more probable as a cause of this tendency to obesity than any possible biochemical or glandular factor resulting from the operation. The 28 patients who had resection for malignant lesions of the left portion of the colon showed, in twenty-six instances, excellent results in one to ten years after operation, good digestive function and full capacity. Here, too, there was no nutritional disturbance except difficulty in keeping the weight down to normal. One patient had nutritional anemia and 1 a postoperative surgical complication.

The 48 patients operated on for carcinoma of the sigmoid flexure and rectosigmoid had equally satisfactory results. During the period of postoperative observation, from one to eleven years, their nutritional condition was on the overnutrition side, they had good control of their colostomies and their capacity for work was normal.

Of the 4 patients with diverticulitis who had resection, 3 were satisfactory from all standpoints, and 1 continued to have some abdominal pain.

In summary, it may be concluded from this study of 262 patients who had radical surgical intervention done on the gastrointestinal tract that resection of any part of the digestive tract is entirely justified when the

lesion is malignant, and that until metastatic involvement occurs the patient may expect satisfactory function and capacity. In ulcerative lesions, both peptic ulcer and ulcerative colitis, radical surgical intervention is justified in cases which are really intractable, but because of the deforming operation in both cases and the possibility of recurrence of peptic ulcer, there should be the highest possible degree of certainty for the need of the operation. Furthermore, since in both diseases the etiology is still obscure and the probable real nature of the disease at least partly constitutional and remote from the locale of the organ itself, there is always the hope that a less radical etiologic treatment may be found to make radical surgical intervention unnecessary. In fact, this type of intervention, while indispensable at present, must still be regarded as far from the final answer to these problems. Of the three organs concerned in this study—the stomach, the small intestine and the colon—it is obvious that the small intestine is by far the most important from the standpoint of physiologic function, and furthermore that it is equipped to assume to some degree the function of both stomach and colon when these organs have been removed.

ABSTRACT OF DISCUSSION

DR. JOHN G. MATEER, Detroit: Our experience has been similar to that of Dr. Jordan. We also have advised operation on only the complicated or the intractable cases. At the Henry Ford Hospital, during the past two years, with further improvements in operative procedure and in preoperative and postoperative care, there has been a further reduction of the operative mortality for gastrectomy from 5 per cent to 2.5 per cent, or two deaths in the last 80 consecutive cases. This reduction of our mortality has encouraged Dr. McClure to substitute almost routinely partial gastrectomy for gastroenterostomy in the complicated ulcer cases. An analysis has been made of the therapeutic end results in the 50 cases of complicated peptic ulcer which have been followed carefully in our gastrointestinal clinic over a period of six months to seven years following gastrectomy. The end results in this total group of benign ulcers include the more and less favorable subgroups of pyloric obstruction, repeated hemorrhage, intractability of ulcer activity, jejunal ulcer and suspected malignant gastric ulcer. A variation in the percentage of patients in the different subgroups of ulcer complications operated on in different clinics necessarily produces some difference in the percentage of optimum therapeutic end results obtained. In 74 per cent of our total group the therapeutic end result was most gratifying, with practically no residual symptoms. In an additional 14 per cent the patients complained of some periodic epigastric fulness and flatulence (as referred to by Dr. Jordan); but the condition of these patients was greatly improved over their preoperative state. In 8 per cent of this total group jejunal ulcer developed after gastrectomy, and in three fourths of these jejunal ulcers hemorrhage developed after pain. The other 4 per cent of patients suffered a great deal of distress, although there was no evidence of postoperative ulcer. To obtain a low percentage of mortality and a high percentage of satisfactory end results from partial gastrectomy for complicated ulcer there are three essential requirements: (1) painstaking preoperative preparation of every patient, (2) operation by a skilful and experienced surgeon and (3) prolonged follow-up medical care of these patients. This care should emphasize continued proper habits of living and, temporarily, an adequate and comprehensive but concentrated diet with five small meals a day. In the few definitely intractable cases of chronic ulcerative colitis ileostomy alone is not always adequate, and subsequent colectomy may be a life-saving measure.

DR. HENRY L. BOCKUS, Philadelphia: Dr. Mateer and Dr. Jordan have mentioned that none of their patients went to the operating room until they had been thoroughly treated medically. Only the intractable ulcers were subjected to surgery. Consequently the results in their cases are not quite so good as those reported in many of the European clinics where this operation is being done routinely for uncomplicated ulcer. Naturally, the mortality in foreign clinics will be less and their recurrences will be fewer, since many of their patients would have responded to adequate medical management. There are about 25 per cent of cases from the statistics of both Dr. Mateer and Dr. Jordan in which the results are not satisfactory. They include the retractable cases that do not do well with any type of treatment. I should like Dr. Jordan to tell us whether she thinks that these patients would be better off if they had not had a subtotal gastrectomy. Many gastroenterologists have the idea that resection of a considerable section of the small bowel leaves the patient in an unfavorable state of subnutritional equilibrium. It is surprising how much of the small bowel can be resected, for example in extensive regional ileitis, and still have the patient go along in a state of good nutritional equilibrium with some attention devoted to the supplying of nutritional elements. I have had one patient who has had about 6 feet of the small bowel resected and who is doing quite well with only two or three bowel movements a day. I should like to reiterate what Dr. Jordan has said, that it is quite important to consider surgery for all of these patients and not to feel that they are beyond the resectable stage if at least the upper half of their small bowel seems normal. I do not agree entirely with the author's remarks dealing with surgery in ulcerative colitis. Our mortality in ulcerative colitis seems definitely proportionate to the number of cases in which operation is performed. We lose very few cases if surgery is not employed. Many of the seriously ill patients, even when they have arrived at the stage when ileostomy was suggested to the family, may go into a remission when it is least expected—if intensive adequate therapy is persistently and doggedly used. For these reasons I have taken a more conservative attitude toward colectomy in the treatment of typical distal advanced ulcerative colitis.

DR. SARA M. JORDAN, Boston: The postoperative nutritional care and treatment with liver and iron, which is done routinely in our clinic, we feel, is most important for patients who have had subtotal gastrectomy. It undoubtedly helps in preventing later anemia; furthermore, the matter of nutrition was of interest in the study of the cases. Postoperatively, patients who have had gastrectomy showed a great tendency to be below their normal weight, while the patients who had resection of the colon and even resection of the small intestine had difficulty in restraining the gain in weight. This fact was an interesting commentary on the digestive processes but may possibly be due to the fact that the colectomy patients, of course, use a diet which is intended to produce formed stools and which probably is also more fattening. Dr. Bockus asked the question whether I felt that these patients were better off even if they did have postoperative trouble. There I think we again have to classify the cases. Those who have an intractable ulcer, e. g. the duodenal ulcer, intractable because it is on the posterior wall of the duodenum and penetrating into the pancreas, are definitely better off, I feel, if the intractability is due to symptoms which result from even mechanical or possibly chemical causes. Hemorrhage, however, still presents a real problem. A patient who has been operated on for multiple hemorrhages, and hemorrhages again after a subtotal gastrectomy, finds himself in a distressing situation, and I think the patient would have to answer the question for himself whether the postoperative hemorrhage which he has occasionally is better or worse than what he had before operation. The outlook in such a case is dubious as far as good results are concerned. With regard to colectomy for ulcerative colitis, I think it presents the most difficult question in gastroenterology: when surgical operation is called for in these desperate cases. Surgeons are really not anxious to operate on these patients because they, too, feel the responsibility of the situation. We try to treat them as long as we feel there is a chance of helping them medically. The two points I brought out are most important here: (1) the possibility of spontaneous remission or cure and (2) the possibility of a discovery tomorrow or the next day of a cause for ulcerative colitis which will make this radical surgery unnecessary.

Clinical Notes, Suggestions and New Instruments

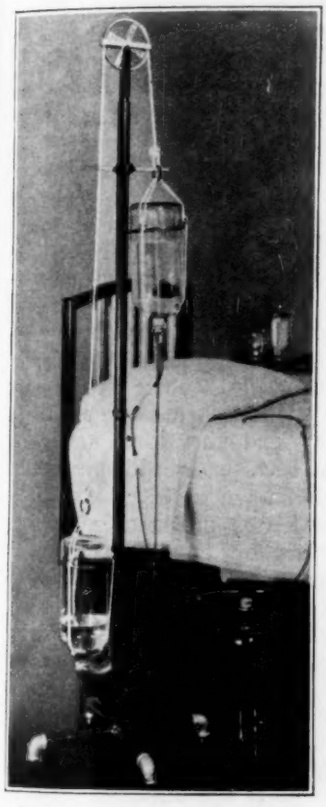
AN EASILY CONSTRUCTED WANGENSTEEN SUCTION APPARATUS

E. E. MYERS, M.D., PHILIPPI, W. VA.

There is a definite need for an inexpensive, easy to operate, foolproof apparatus to provide suction of the Wangensteen type. The last two desiderata are provided by machines now obtainable from surgical supply houses, but the item of expense prevents most hospitals from possessing as many machines as they would like to have.

The accompanying illustration shows a suction apparatus inexpensive and easily constructed, simple in design and convenient in operation. This apparatus embodies a new principle, in that both bottles are kept in the inverted position, making the connections and operation simpler.

The construction, briefly described, is as follows: The stand is made from 1 inch (2.5 cm.) pipe and is 5½ feet (167.6 cm.) high; the base is 22 inches (55.8 cm.) wide. The center of the base employs a "cross with side outlet." The wheel at the top is a clothesline pulley, obtainable at most hardware stores. This is plated to a ¾ inch (1.9 cm.) pipe which, when threaded, tapers sufficiently to fit tightly into the 1 inch pipe. The support for the upper bottle is made from a piece of strap iron bent around the pipe stand, held with a bolt and wing nut and having a ¼ inch (0.64 cm.) soft iron bar welded to it. The lower support, which holds the tube from the collecting bottle, is made from strap iron having a hole in the end through which the tube from the collecting bottle is placed. A short piece of rubber tubing passes through the hole, which is barely larger than the tubing. Above is a Sim's nozzle and below a straight connecting tube. This arrangement keeps the tube in position.



The suction apparatus set up ready for use.

In each bottle are two glass tubes; one goes the length of the bottle and the other just through the rubber stopper. The short tubes are connected together with a long piece of rubber tubing, and the long tube of the upper bottle is attached to the collecting bottle. In operation, when the upper bottle is empty the Sim's nozzle is disconnected from the short piece of rubber tubing attached to the upper bottle and the position of the bottles changed. This is easily done by pulling down on the one while the other is lifted. The Sim's nozzle is then connected to the rubber tube of the raised bottle, and suction is produced by the flow of water to the lower bottle. It is advisable to clamp off the tube from the collecting bottle during the change, in order to maintain suction.

A word of caution in the use of this apparatus: The support for the collecting tube is essential, because without it the bottles might be changed in position without disconnecting this tube and air forced back into the patient. Glass connecting tubes on either side of the support prevent the tube from sliding through the support, and as long as the apparatus is set up in the manner described there is no danger of this kind.

The holders for the bottles can be made from canvas, wire, metal bands or, as shown in this equipment, from rings and rope. Harness rings 1¼ inches (3.1 cm.) in diameter are used for support of the bottles on the horizontal bar. The rubber stoppers are held in the bottles by stout twine tied in the manner illustrated in an article by Wangensteen.[1] Sash cord is used over the pulley to support the bottles.

The instrument has this advantage, that the degree of negative pressure can be easily varied if desired by changing the position of the horizontal bar on the stand.

The cost for the materials used does not exceed $5, and the entire apparatus should be made for less than $10.

The Myers Clinic Hospital.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

CORPUS LUTEUM HORMONE

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BALTIMORE

This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of "Glandular Physiology and Therapy." The opinions expressed in this article are those of the author and do not necessarily represent the views of the Council.—ED.

FUNCTION OF THE CORPUS LUTEUM

Speaking broadly, the endocrine function of the corpus luteum is now well understood. The gland is a part of the mechanism of pregnancy. When an ovum begins its journey through the fallopian tube, the follicle from which it took origin gives place to the corpus luteum, and this organ thereupon delivers into the blood stream a substance, progesterone, that has the property of causing extensive development of the endometrium, preparing the uterus for the reception and nutrition of the embryo.

Action on the Uterine Mucosa.—The action of the corpus luteum on the uterus is best known in the rabbit, because that species especially has been used for experiments with progesterone. About two days after the formation of the corpora lutea or after the beginning of a course of treatment with progesterone, rapid cell division begins in the epithelium, resulting in a downgrowth of the glands and ultimately in branching so profuse that the endometrium is crowded full of glands. The cells of the surface epithelium also increase in number by mitotic division so that the surface is folded. The epithelial cells, both on the surface and in the glands, become taller and acquire a more definitely columnar arrangement, presenting finally the appearance of secretory activity.

Accompanying this intense wave of epithelial proliferation there is marked engorgement of the endometrial blood vessels. By the fifth day the cells no longer divide, presumably because they have been converted to the secretory state, and the progravid condition is well established.

Because the implantation of the embryo (which these changes serve to promote) differs considerably in

1. Wangensteen, O. H., and Paine, J. R.: Treatment of Acute Intestinal Obstruction by Suction with Duodenal Tube, J. A. M. A. **101:** 1532 (Nov. 11) 1933.

different animals, the progestational proliferation differs also in detail. In the domestic pig, for example, with its superficial and noninvasive placentation, it is only the surface epithelium of the uterine lining which comes into contact with the embryonic tissues; therefore the effect of the corpus luteum is chiefly on the surface cells.

In the human and the other primate species, on the contrary, the implantation is invasive, and the progestational proliferation consequently affects chiefly the glands and the stroma, producing the well known "premenstrual" endometrium, in which the glandular epithelial cells become very high, with frayed surfaces, and the glands are dilated and acquire serrated contours. Glycogen is deposited in the epithelium, and the connective tissue cells of the stroma begin to enlarge in preparation for decidual change if pregnancy ensues.

By the time the fertilized ovum reaches the uterus, the endometrium is therefore already in a state of heightened secretory activity, by which (presumably) nutritive substances are provided for the embryo. The nature of this favorable chemical action is not yet clearly known; the experiments of Pincus [1] suggest that glutathione is secreted into the uterus and stimulates growth of the early embryo and of the endometrium itself.

When the embryo, thus nourished by the secretory activity of the endometrium, goes on to the stage of implantation, its requirements are met by another response of the uterus under the influence of the corpus luteum. The endometrium in some way is sensitized so that it responds to the presence of the embryo by forming the maternal part of the placenta (and the decidua, in those species in which the endometrial stroma becomes deciduous). This effect is well seen in the guinea pig, in which Loeb showed long ago that even in the nonpregnant animal the presence of corpora lutea in the ovaries is sufficient to induce in the uterus a special state during which any mechanical irritation (such as the presence of a small foreign body or a scratch) will produce a mass of decidual tissue exactly as if the embryos had been there to call it forth by the stimulus of their implantation.

Experiments have amply shown that removal of the corpus luteum during the early part of pregnancy causes failure of implantation of the embryo; if the embryo is already implanted, removal of the corpus causes destruction of the pregnancy.

Conversely, extracts of the corpus luteum that are administered to animals castrated during early pregnancy are able to replace the missing secretion and to maintain pregnancy.

Action on Uterine Muscle.—In addition to its progestational effect on the uterine mucosa, progesterone acts also on the uterine muscle, diminishing its spontaneous contractions and thus rendering the uterus quiescent. This probably also serves to facilitate attachment of the embryo, by inhibiting movements of the uterine wall which might hamper implantation at the critical time when the embryo is settling down at its site of attachment.

Although this action of progesterone varies considerably in different species, there is good evidence that it occurs in the human species.[2] This is important in connection with therapy, for it suggests the possibility that the substance may be useful not only for its specific effects on the endometrium but also for its sedative action on irritability of the myometrium.

So far as is known at present, the corpus luteum has no useful action except in pregnancy, but in most mammals (including the human species) the gland is formed in every cycle, in anticipation (so to speak) of pregnancy, and therefore in each human cycle the corpus luteum normally acts for about two weeks, bringing about the so-called premenstrual stages of the endometrium. When it retrogresses, menstruation ensues. Thus in the adult nonpregnant human female the corpus luteum is functioning about half the time, and takes part in the general physiology of the body to that extent. In animals with less frequent cycles the proportion of time during which the corpus luteum functions is much less; obviously, therefore, it is not necessary for general well-being.

PROGESTERONE

The substance elaborated by the corpus luteum which gives the effects described was first extracted in crude form from the ovaries of swine by Corner and Allen [3] and by Hisaw, Meyer, Weichert and Fevold [4] and was partially purified by Allen.[5] Investigations by Butenandt and Westphal,[6] by Slotta, Ruschig and Fels [7] and by Allen and Wintersteiner,[8] all of whom obtained the active factor in the pure state practically simultaneously, revealed that progesterone is a crystalline steroid having the formula $C_{21}H_{30}O_2$. It is closely related to the natural estrogens and androgens.

A number of other substances, closely related chemically to the ones just mentioned, have been found to have the same effect on the uterus as progesterone, but only in much larger doses. Pure progesterone exists in two different crystalline forms, one melting at 128 C. (α progesterone) and the other at 121 C. (β progesterone). It has been produced synthetically [9] from the vegetable sterol known as stigmasterol; the material now on the market is presumably made by similar methods from this or another sterol. By general agreement of the investigators concerned, the name "progesterone" is used for the pure principle; the term "progestin" is used to indicate the whole group of substances having similar action and to describe such a factor when present in a partially purified state or when not fully identified chemically.

Progesterone is administered by intramuscular injection, in solution in a vegetable oil; it cannot be given by mouth, because either it is not absorbed from the gastrointestinal tract or it is inactivated by the processes of digestion. In 1939 pregneninolone, a substance

1. Pincus, Gregory: The Metabolism of Ovarian Hormones, Especially in Relation to the Growth of the Fertilized Ovum, in Cold Spring Harbor Symposia on Quantitative Biology, Cold Spring Harbor, L. I., New York, The Biological Laboratory, 1937, vol. 5, p. 44.

2. Reynolds, S. R. M.: Physiology of the Uterus, with Clinical Correlations, New York, Paul B. Hoeber, Inc., 1939.

3. Corner, G. W., and Allen, W. M.: Physiology of the Corpus Luteum: II. Production of a Special Uterine Reaction (Progestational Proliferation) by Extracts of the Corpus Luteum, Am. J. Physiol. **88**: 326 (March) 1929.

4. See Allen, W. M.: Biochemistry of the Corpus Luteum Hormone, Progesterone, in Allen, Edgar; Danforth, C. H., and Doisy, E. A.: Sex and Internal Secretions, ed. 2, Baltimore, Williams & Wilkins Company, 1939, chap. 15, p. 901-928.

5. Allen, W. M.: Physiology of the Corpus Luteum: V. The Preparation and Some Chemical Properties of Progestin, a Hormone of the Corpus Luteum Which Produces Progestational Proliferation, Am. J. Physiol. **92**: 174 (Feb.) 1930.

6. Butenandt, Adolf, and Westphal, U.: Zur Isolierung und Charakterisierung des Corpus-luteum-Hormons, Ber. d. deutsch. chem. Gesellsch. **67**: 1440, 1934.

7. Slotta, K. H.; Ruschig, H., and Fels, E.: Reindarstellung der Hormone aus dem Corpus-luteum, Ber. d. deutsch. chem. Gesellsch.. **67**: 1270, 1934.

8. Allen, W. M., and Wintersteiner, Oskar: Crystalline Progestin, Science **80**: 190 (Aug. 24) 1934.

9. Butenandt, Adolf; Westphal, U., and Cobler, H.: Ueber einen Abbau des Stigmasterins zu Corpus-luteum-wirksamen Stoffen; ein Beitrag zur Konstitution des Corpus-luteum-Hormons, Ber. d. deutsch. chem. Gesellsch. **67**: 1611, 1934. Fernholz, E.: Zur Synthese des Corpus luteum-Hormons, ibid. **67**: 1855, 1934.

closely related to progesterone, was found to be effective when given by mouth.[10] This drug is now available commercially, but at the time of writing little clinical experience with it has been reported.

In castrated rabbits progesterone readily produces progestational changes in the uterus; in rabbits castrated during early pregnancy it will protect the embryos by substituting for the product of their mother's corpora lutea and will maintain the pregnancy to full term. In guinea pigs it sensitizes the uterus to produce the maternal part of the placenta (Loeb's deciduoma).

In castrated women the premenstrual state of the endometrium can be produced by administering large doses of estrogen to bring the uterus back to its normal interval stage and then progesterone to effect the premenstrual changes. In monkeys progesterone has been shown to inhibit menstruation; but if a course of treatment with progesterone is given to the normal animal, or to a castrated animal suitably prepared with estrogen, menstruation inevitably follows discontinuance of the progesterone. Similar effects have been seen in human subjects.

International Unit; Assay.—In 1935 a conference under the auspices of the League of Nations adopted an international standard of potency, which was defined as the amount of progestational activity present in 1 mg. of progesterone. This international unit has been generally adopted. The assay is usually performed by administering the preparation to be tested for five days to an adult female rabbit that has been mated and then castrated, or to an immature rabbit of about 600 Gm. weight which has been primed with five to ten daily doses of estrogen preceding the course of treatment with the test preparation. The progestational effect on the endometrium is estimated microscopically from sections of the uterus. Before the League of Nations standard was set up, various investigators were making use of other units. The Corner-Allen unit, based on use of the adult rabbit for assay and commonly cited in the American literature, is approximately equal to the international unit; the Clauberg unit, based on the immature rabbit, represents about 0.6 international unit.

Pregnandiol.—Endocrinologists owe to Venning and Browne[11] the demonstration that pregnandiol, a substance chemically related to progesterone and already known to exist in the urine of pregnant women, is actually derived from progesterone and represents the latter's excretion product. Pregnandiol as it appears in the urine is conjugated with glycuronic acid to form a water-soluble compound, sodium pregnandiol glycuronidate. Since each molecule of pregnandiol represents one molecule of progesterone, the amount of the former substance recovered from the urine in a given period gives at least a rough measure of the functional activity of the corpus luteum, although losses during excretion and during chemical manipulation, amounting perhaps to 50 per cent, prevent an exact measure of the progesterone output.

In the normal menstrual cycle pregnandiol appears in the urine about twelve days before the onset of menstruation (i. e., a day or two after ovulation). The excretion reaches a peak about one week before menstruation and usually ceases two or three days before the onset of bleeding. The curve of pregnandiol excretion thus closely parallels the rise, activity and retrogression of the corpus luteum. From several investigations[12] one learns that the daily output at the peak, though variable, is of the order of 5 mg. of pregnandiol daily, and this may be conjectured to mean that the corpus luteum when most active produces something like 10 mg. of progesterone per day.

In pregnancy the output of pregnandiol begins to rise about the seventieth to the ninetieth day and in the ninth month may reach 60 to 100 mg. daily.[13] It is generally agreed that the large amount of progesterone indicated by these figures is not made by the corpus luteum but by the placenta.

CLINICAL POSSIBILITIES

Progesterone is now available in the drug trade, and the price, though still high, has been reduced sufficiently to make its use possible. Progesterone therapy is still, however, in the stage of experiment, and all the physician can do at present is to follow with caution the lead of the more critical clinical investigators as they progress. The clues given by its known effects on the endometrium and myometrium have naturally suggested its use in recurrent and threatened abortion, in dysmenorrhea, in after-pains of the early puerperium and in so-called functional uterine bleeding.

Recurrent Abortion.—Since the corpus luteum, as already shown, plays an essential part in promoting the growth and implantation of the early embryo and is necessary for maintenance of pregnancy during its earlier period, it is obvious that failure of the corpus luteum may be at times the cause of abortion. Such a result might be due to failure either of the progestational ("premenstrual") secretory reaction of the endometrium or to nonoccurrence of the quiescent state of the endometrium induced by progesterone or to both. Evidence has been obtained by Browne, Henry and Venning[13b] from estimations of pregnandiol excretion that in certain cases spontaneous abortion is indeed associated with diminished function of the corpus luteum. In such cases the condition should be relieved by treatment with progesterone. It is also possible that progesterone might be useful in preventing spontaneous abortion from other causes; by its property of inhibiting uterine motility it might act to reduce crampy uterine contractions no matter what their cause. There have been a number of favorable reports on progesterone therapy for recurrent abortion. Obviously, the results must be considered critically, for it is never possible to know in any individual case what would have happened without therapy. Statistical criteria for judging the results have recently been laid down by Malpas[14] and by MacGregor and Stewart.[15] Women who have aborted spontaneously three times are statistically almost certain to abort again if they become pregnant;

10. Hohlweg, Walter, and Inhoffen, H. H.: Pregneninolon, ein neues per os wirksames Corpus luteum-Hormonpräparat, Klin. Wchnschr. **18:** 77 (Jan. 21) 1939. Clauberg, C., and Uestün, Ziya: Menstruation—per os erzeugt, Zentralbl. f. Gynäk. **62:** 1745 (Aug. 6) 1938.

11. Venning, E. H., and Browne, J. S. L.: Isolation of a Water-Soluble Pregnandiol Complex from Human Pregnancy Urine, Proc. Soc. Exper. Biol. & Med. **34:** 792 (June) 1936.

12. (*a*) Venning, E. H., and Browne, J. S. L.: Studies on Corpus Luteum Function: II: Urinary Excretion of Sodium Pregnandiol Glucuronidate in the Human Menstrual Cycle, Endocrinology **21:** 711 (Nov.) 1937. (*b*) Hamblen, E. C.; Ashley, Catharine, and Baptist, Margaret: Sodium Pregnandiol Glucuronide: The Significance of Its Excretion in the Urine, ibid. **24:** 1 (Jan.) 1939. (*c*) Wilson, R. B.; Randall, L. M., and Osterberg, A. E.: Studies on Pregnandiol, Am. J. Obst. & Gynec. **37:** 59 (Jan.) 1939. (*d*) Stover, R. F., and Pratt, J. P.: Progestin Studies: Pregnandiol Excretion, Endocrinology **24:** 29 (Jan.) 1939. (*e*) Müller, H. A.: Die Pregnandiolausscheidung im Harn als Spiegelbild der Funktion des Corpus luteum, Klin. Wchnschr. **19:** 318 (April 6) 1940.

13. (*a*) Smith, G. V., and Smith, O. W.: Estrogen and Progestin Metabolism in Pregnant Women, Am. J. Obst. & Gynec. **39:** 405 (March) 1940. (*b*) Browne, J. S. L.; Henry, J. S., and Venning, E. H.: The Significance of Endocrine Assays in Threatened and Habitual Abortion, ibid. **38:** 927 (Dec.) 1939. Wilson and others.[12c]

14. Malpas, Percy: A Study of Abortion Sequences, J. Obst. & Gynaec. Brit. Emp. **45:** 932 (Dec.) 1938.

15. MacGregor, T. N., and Stewart, C. P.: Investigation of Cases of Recurrent Abortion and Their Treatment with Progesterone, J. Obst. & Gynaec. Brit. Emp. **46:** 857 (Oct.) 1939.

such patients afford a real test of therapeutic effects, and if pregnancy is maintained, it is probable that the treatment was useful. The latest investigators rather cautiously agree that progesterone is a valuable agent in such cases.[16] Treatment should be begun as soon as pregnancy is suspected. Not less than 1 mg. daily is to be given, and preferably more, up to 5 or even 10 mg. If, as seems likely, the placenta supplies the hormone after about the third month, progesterone treatment is probably unnecessary thereafter.

Threatened Abortion.—It has been observed repeatedly that the cramps and bleeding which indicate a threatened abortion may subside after the injection of 1 mg. or more of progesterone, probably because this substance inhibits uterine motility and causes growth of the endometrial tissue. In such cases, if viability of the fetus is indicated by clinical signs and a urinary test for pregnancy (Aschheim-Zondek, Friedman) is positive, the patient should be put at rest and given progesterone in ample dosage (not less than 1 international unit daily, and if possible, 5 or even 10) until the symptoms subside. After this, 1 unit daily may be given until it is thought safe to let the patient get up; thereafter less frequent doses are probably indicated until late in pregnancy. If symptoms recur, more intensive treatment may be resumed.

The advice to use relatively large doses, given in the foregoing paragraphs, follows the trend of sound clinical and laboratory experience and agrees, moreover, with the known rate of normal secretion by the human corpus luteum (see foregoing section on pregnandiol; during the third month, the most critical period for abortion, the normal patient is probably producing 15 to 40 mg. of progesterone.) Clinical results from very small doses, representing fractions of 1 unit per day, have been reported. It is perhaps possible that such small doses may at times serve by a trigger-like action or by redressing a delicate imbalance, but in the present state of knowledge 1 mg. per day is surely the least quantity that could conceivably affect the human body. There has never been any report of harmful effects from progesterone, in animals or women, even with large doses.

Dysmenorrhea.—Investigators have no satisfactory and comprehensive explanation of the cause of primary dysmenorrhea, and in all probability the condition is not a single clinical entity. The use of progesterone has sometimes been based on special hypotheses about endocrine factors in dysmenorrhea and sometimes on the hope that the substance may relieve pain by its property of reducing the irritability of the myometrium. Results must be judged critically, in view of the great importance of psychic and other general factors in such conditions. It is, however, reliably reported that a few sufferers from primary dysmenorrhea have received striking benefit and that about 25 to 50 per cent have been definitely helped by progesterone. Treatment should begin three or four days before the expected onset of menstrual pain. One or 2 international units per day may be given at first, but if necessary the dose should be pushed up to 5 units or more before abandoning the experiment.

A thorough, well controlled study of this question is greatly to be desired.

After-Pains.—As shown by Lubin, Clarke and Reynolds,[17] pain due to uterine contractions following parturition is promptly relieved by 1 international unit of progesterone. No harmful effects have been reported, although theoretically at least there is a possibility of harm from relaxation of the uterus.

Metrorrhagia and Menorrhagia; Amenorrhea.—In the normal menstrual cycle the corpus luteum is present during the second half of the interval; the menstrual flow begins when the corpus luteum degenerates. Administered progesterone in normal monkeys postpones natural menstruation, and in castrate monkeys suppresses the artificial menstruation produced by estrogen deprivation.[18] Progesterone has therefore been tried therapeutically in metrorrhagia and menorrhagia, and favorable results have been reported. In the special case of bleeding associated with glandular hyperplasia of the endometrium, another physiologic reaction may play a part. This disease is generally considered, on experimental grounds, to result from overaction of estrogenic hormones on the endometrium; progesterone may act beneficially either by cutting down the effectiveness of the estrogens, as it seems to do in the normal cycle,[18] or by producing changes of the premenstrual type and thus in some way counteracting the tendency to bleeding. Until one knows exactly why the uterus bleeds in normal menstruation and in functional uterine disease, one can hardly offer a more precise explanation of therapeutic hopes or results.

For the present the treatment of functional bleeding must be left to specialists in gynecologic endocrinology for cautious experimentation after skilled clinical analysis of each case. Because of the danger that abnormal bleeding may be due to a benign or a malignant tumor, the general physician should not administer progesterone for uterine hemorrhage.

As to amenorrhea, endocrinologists know as yet little about the hormonal relations of such disturbances of the cycle. Here again the use of ovarian products is still quite experimental and must be worked out by clinical specialists.

Other Conditions.—Now that progesterone is becoming generally available, it is inevitable that it will be tried, both rationally and irrationally, for all sorts of diseases; such efforts are to be received with caution. Already there are reports of its use in the treatment of certain types of rhinorrhea, arthritis and disturbances of the thyroid. "Corpus luteum therapy" for hyperemesis gravidarum, once attempted with orally administered glandular preparations but long abandoned, is being revived with progesterone. Serious attempts are being made to relieve toxemias of pregnancy, especially eclampsia, with this substance, though apparently thus far without statistically better results than can be achieved by conservative general treatment.

EMPIRIC PREPARATIONS

A number of corpus luteum preparations are still on the market in tablet form for oral administration or in aqueous solution, which are not assayed for progesterone and contain at most very small amounts of this factor. The methods of preparation or of administration are often such as to remove or to destroy the progesterone; if these preparations contain any other useful substance, it is something unknown to science. Their use is quite empiric, and they will no doubt become obsolete now that genuine assayed progesterone-containing products are available.

16. Browne and others.[13b] MacGregor and Stewart.[15]

17. Lubin, Samuel; Clarke, F. J., and Reynolds, S. R. M.: The Relation of After-Pains to Uterine Contractions Following Administration of Progestin, Am. J. Obst. & Gynaec. **33**: 143 (Jan.) 1937.

18. Corner, G. W.: The Ovarian Hormones and Experimental Menstruation, Am. J. Obst. & Gynec. **38**: 862 (Nov.) 1939.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

GENERAL AUTOMATIC ULTRA VIOLET SOLEIL LAMP, MODEL E-43 ACCEPTABLE

Manufacturer: General Automatic Corporation, Macedonia, Ohio.

The General Automatic Ultra Violet Soleil Lamp, Model E-43 provides ultraviolet radiation within the limits of the standards set by the Council for devices using the term "sunlamp." These standards require that the energy of wavelengths shorter than and including 2,800 angstroms shall not exceed 1 per cent of the total energy of wavelengths between 2,804 and 3,132 angstroms. Since these wavelengths fall in the spectral region of low erythematogenic action, the sunlamp is suitable for unsupervised use by the layman.

The S-4 burner used in the lamp is a Westinghouse unit. The firm submitted the following data:

Burner input watts	120
Total watts required	250
Line voltage	110-120
Primary amperes	2.2
UV output at 30", m. w. per cm²	75
Rated burner life in hours	400

The lamp operates only on alternating current.

Spectral ultraviolet radiation measurements were made on the S-4 lamp in a laboratory selected by the Council. These measurements showed that the radiation of wavelengths shorter than 2,800 angstroms is immeasurably small, and hence these lamps qualify as sunlamps as far as spectral quality (wavelength) of radiation is concerned.

General Automatic Ultra Violet Soleil Lamp, Model E-43.

In this investigation the lamp was placed close in front of the quartz-fluorite achromatic spectroradiometer, and the spectral intensities were measured with a vacuum thermopile. The relative spectral intensities (galvanometer deflections) corrected for absorption in the spectroradiometer are given in the accompanying table.

The radiation at 2,804 angstroms (and shorter if measurable) is about 0.75 per cent of the total wavelengths, including 3,132 angstroms and shorter. Mounted in an aluminum reflector the radiation at 2,894 angstroms and shorter, relative to the total, would be still lower; hence these lamps comply with the Council's requirements for acceptability of a sunlamp for spectral quality of ultraviolet radiation.

Relative Spectral Intensities

Wavelengths (Angstroms)	Relative Energy (Average of 3 Lamps) Microwatts per Square Cm.
3,132	7.96
3,024	2.59
2,967	1.15
2,894	0.28
2,804	0.09
Total	12.07

The S-4 burner is mounted in what is stated by the firm to be a "true parabolic reflector" 10½ inches in diameter and spun from 20 gage aluminum, with a highly polished reflecting surface. The operating switch is built in the lamp head above the reflector. A horizontal arm supports the reflector and is mounted on a vertical stand, which also is adjustable. The base is 14 inches in diameter, weighs 26½ pounds and is equipped with four ball bearing casters. The net weight of the unit is 35 pounds.

The Council on Physical Therapy voted to accept the General Automatic Ultra Violet Soleil Lamp, Model E-43 for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

OFFICE OF THE SECRETARY.

SULFAPYRIDINE (See New and Nonofficial Remedies, 1940, p. 494).

The following dosage forms have been accepted:

Tablets Sulfapyridine 0.5 Gm. (7½ grains).
Prepared by Eli Lilly & Co., Indianapolis.
No U. S. patent or trademark.

Pulvules Sulfapyridine 0.25 Gm. (3¾ grains).
Prepared by Eli Lilly & Co., Indianapolis.
No U. S. patent or trademark.

LIVER LIQUID PARENTERAL 4 U. S. P. INJECTABLE UNITS PER CC.-ARMOUR.—A sterile aqueous solution containing the nitrogenous nonprotein fraction G of Cohn preserved with 0.3 per cent of cresol. The daily intramuscular administration of 0.25 cc. of liver liquid parenteral-Armour has been demonstrated to produce a satisfactory hemopoietic response defined as 1 U. S. P. unit (injectable) when assayed in cases of pernicious anemia as required by the Council.

Actions and Uses.—Liver liquid parenteral-Armour is proposed for intramuscular injection in the treatment of pernicious anemia. See general article Liver and Stomach Preparations, New and Nonofficial Remedies, 1940, p. 320.

Dosage.—The daily administration of 0.5 cc. (2 U. S. P. injectable units) for six days is recommended. After this period the dose may be reduced to 0.25 cc. (1 U. S. P. injectable unit) daily until the blood picture is satisfactory. Thereafter, either the volume of the dose or the time interval between doses is adjusted according to the individual patient's needs.

Manufactured by the Armour Laboratories, Chicago. No U. S. patent or trademark.

Vials Liver Liquid Parenteral 4 U. S. P. Injectable Units per cc.-Armour, 1 cc.

Vials Liver Liquid Parenteral 4 U. S. P. Injectable Units per cc.-Armour, 5 cc.

Vials Liver Liquid Parenteral 4 U. S. P. Injectable Units per cc.-Armour, 10 cc.

To prepare liver liquid parenteral-Armour fresh U. S. government inspected mammalian livers (minced finely) are mixed with three volumes of water, then macerated and heated to 85 C. to remove coagulable protein. The resulting mixture is condensed in vacuo at low temperature to syrup consistency. Ethyl alcohol is added to a concentration of 70 per cent. The mixture is allowed to stand for eighteen hours or over night. The alcohol solution is withdrawn and placed under refrigeration for several days until no further precipitation occurs. The clear liquid is siphoned off, and the alcohol removed by negative pressure at low temperature. The resultant residue is dissolved in distilled water and adjusted so that 1 cc. represents 100 Gm. of fresh liver tissue. Cresol U. S. P., 0.3 per cent, is added and the liquid allowed to stand in the aseptic room until no further precipitation occurs. The clear supernatant liquid is passed through a Berkefeld filter and filled into 1, 5 and 10 cc. rubber-capped vials under aseptic conditions. The contents of the vials are tested for sterility and tissue irritants, such as toxic amines, before the product is released.

SODIUM IODIDE.—"When dried to constant weight at 120 C., contains not less than 99 per cent NaI. It contains not more than 5 per cent of water." *U. S. P.*

For standards see the U. S. Pharmacopeia under Sodii Iodidum.

Actions, Uses and Dosage.—See the general article Iodine Compounds for Systemic Use (New and Nonofficial Remedies, 1940, p. 290).

The following dosage forms have been accepted:

Ampules Sodium Iodide-Lakeside, 1.0 Gm. (15½ grains), 10 cc.
Prepared by the Lakeside Laboratories, Inc., Milwaukee.

Ampules Sodium Iodide-Lakeside, 2.0 Gm. (31 grains), 10 cc.
Prepared by the Lakeside Laboratories, Inc., Milwaukee.

Ampules Sodium Iodide-Lakeside, 2.0 Gm. (31 grains), 20 cc.
Prepared by the Lakeside Laboratories, Inc., Milwaukee.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBURARY 15, 1941

THE PROPHYLAXIS OF RHEUMATIC FEVER

Although some evidence [1] tends to show that sulfanilamide is without therapeutic effect (and may even be dangerous) in the treatment of rheumatic fever, the reports of Thomas and France [2] in Baltimore and of Coburn and Moore [3] in New York have indicated that the drug may be of prophylactic value in preventing the recurrence of rheumatic attacks. Its experimental use for this purpose was based on the series of observations made by Coburn during the past decade, which relate rheumatic activity to the presence of hemolytic streptococcus infections of the rhinopharynx.

Both groups of investigators thought that, if these infections of the throat could be prevented, rheumatic recrudescences might not occur. To accomplish this result, small doses of sulfanilamide were given daily to rheumatic subjects during the period of the year (October to June or July) in which the incidence of streptococcic infections of the pharynx is highest. The Baltimore investigators found that major rheumatic recrudescences did not occur in the groups which received sulfanilamide prophylaxis, while in New York, Coburn and Moore [4] state that in their group of rheumatic subjects who were treated in a like manner "the incidence of rheumatic fever . . . was less than 1 per cent."

In this issue of THE JOURNAL Thomas, France and Reichsman [5] report that, during the last four years, major rheumatic incidents were not observed in groups of known rheumatic subjects who had been placed on daily prophylactic doses of sulfanilamide during the fall, winter and spring months. Another interesting point brought out in this paper is that the toxic effects resulting from this prolonged dosage with sulfanilamide were negligible.

While these reports present a hopeful picture for the use of sulfanilamide in the prophylaxis of rheumatic fever and certainly show that the drug may be used in small daily doses for long periods with comparative safety, the final evaluation of this method of prevention awaits results obtained in large, carefully controlled series of young rheumatic subjects. In view of the widespread occurrence and the crippling effects of rheumatic fever, it is to be hoped that interest in and support for such projects will be sufficient to permit a final evaluation of this promising lead in the prevention of rheumatic fever.

1. Massell, B. F., and Jones, T. D.: The Effect of Sulfanilamide on Rheumatic Fever and Chorea, New England J. Med. **218:** 876 (May 26) 1938. Swift, H. F.; Moen, J. K., and Hirst, G. K.: The Action of Sulfanilamide in Rheumatic Fever, J. A. M. A. **110:** 426 (Feb. 5) 1938.

2. Thomas, Caroline B., and France, Richard: A Preliminary Report of the Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever, Bull. Johns Hopkins Hosp. **64:** 67 (Jan.) 1939.

3. Coburn, A. F., and Moore, Lucile V.: The Prophylactic Use of Sulfanilamide in Streptococcal Respiratory Infections with Especial Reference to Rheumatic Fever, J. Clin. Investigation **18:** 147 (Jan.) 1939; The Prophylactic Use of Sulfanilamide in Rheumatic Subjects.[4]

4. Coburn, A. F., and Moore, Lucile V.: The Prophylactic Use of Sulfanilamide in Rheumatic Subjects, M. Clin. North America **24:** 633 (May) 1940.

5. Thomas, Caroline B.; France, Richard, and Reichsman, Franjo: The Prophylactic Use of Sulfanilamide in Patients Susceptible to Rheumatic Fever, this issue, p. 551.

NONENDOCRINE THERAPY OF ENDOCRINE DISORDERS

The series of special articles comprising the second edition of Glandular Physiology and Therapy, now being published in THE JOURNAL under the auspices of the Council on Pharmacy and Chemistry, indicates progress in the treatment of glandular disorders and the increased availability of numerous potent endocrine preparations. These substances are being widely used for substitution, stimulation or suppression of glandular activity. The treatment of endocrine disorders is not, however, necessarily limited to the use of hormonal substances. When the mechanism of the hormonal action is understood, the therapeutic problem may sometimes be attacked successfully by the use of nonendocrine substances whose concentration in the body has been disturbed by the endocrine dysfunction. For example, in Addison's disease or insufficiency of the adrenal cortex, excretion of sodium is increased, and this is responsible for many of the symptoms and signs. Although the administration of cortical steroids restores the sodium concentration of the tissues, an increase in the intake of sodium salts (as sodium chloride) alone may correct significantly the disturbances due to adrenal insufficiency.

Similarly, a method has been recently devised for the treatment of premenstrual distress or tension without endocrine therapy. Greenhill and Freed [1] have postulated, on the basis that the ovarian hormones, among other steroids, have the property to cause salt and water retention in the body, that symptoms of distress which occur during the premenstrual period may be due to edema of the various organs of the body. Thus, certain types of "premenstrual" migraine,

1. Greenhill, J. P., and Freed, S. C.: Mechanism and Treatment of Premenstrual Distress with Ammonium Chloride, Endocrinology **26:** 529 (March) 1940.

irritability, nausea, abdominal distention and frank edema were explained by the increase in extracellular fluid of the central nervous system, intestine and subcutaneous tissue. These investigators have administered from 2 to 3 Gm. of ammonium chloride daily, or approximately one fourth to one half the average diuretic dose, to patients during the last half of the menstrual cycle in order to combat the increase in extracellular fluid following sodium retention. They report that this therapy eliminated to a large extent the development of the premenstrual distress or tension in a large proportion of their patients. Since premenstrual distress is of common occurrence, this therapeutic procedure would seem to be a useful contribution.

While much progress may be made through the use of endocrine preparations, therapy with these substances is not necessarily the ideal or only method of treating some endocrine disorders. Consideration of the fundamental properties of hormones may possibly lead to shortcuts in the correction of the appropriate dysfunction. Other methods, including surgery and radiotherapeutic measures, may be better indicated in some conditions than the administration of glandular principles.

PHYSICIANS OFFERED A "DEAL"

On January 13 postcards were mailed to various physicians in the Indiana area which read as follows:

Dear Doctor:—I would like to enter into an arrangement with you, requiring your full time service away from your office. Attractive opportunity and fine remuneration. Office space is provided. This is a permanent arrangement. The proposition is in Anderson, Indiana. If you are interested, wire collect, giving your phone number, so that I can call you.

B. Sherman
1148 W. Chicago Ave.
Chicago, Illinois

A check of the address indicated that its occupant is the Ritholz Optical Company. The Bureau of Investigation first dealt with the Ritholz optical concerns in an article in THE JOURNAL, July 25, 1925. Ten years later, in the July 6, 1935 issue, the Bureau reported, under the title "The Ritholz Frauds," a post office fraud order issued against the concern. Nine different trade styles were listed in this article, although not all of them were named specifically in the fraud order, some of them apparently being local concerns not employing the mails; namely, "Dr. Ritholz Optical Co., Inc.," "Dr. Ritholz Optical Co." and "Ritholz Optical Co." This article also called attention to the fact that the energetic action on the part of the Chicago Better Business Bureau had resulted in barring the facilities of Chicago newspapers and radio stations to these stores. Subsequently the Ritholz concern agreed to advertise in accordance with the standard practice of optometrists, and the Better Business Bureau announced this in its Bulletin. Later THE JOURNAL carried reports of two law suits involving the National Optical Stores and Benjamin D. Ritholz. The first of these referred to the case of *Ritholz et al.* v. *North Carolina State Board of Examiners in Optometry et al.*, 18 F. Supp. 409, which was abstracted in THE JOURNAL, Dec. 11, 1937, page 2015; the second was that of *Ezell et al.* v. *Ritholz et al.* (S. C.), 198 S. E. 419, which was abstracted in THE JOURNAL, July 1, 1939, page 88.

In 1934 the Federal Trade Commission issued an order against Benjamin D. Ritholz of Chicago, doing business under the names Chicago Dentists and Chicago Dental House, Inc., in connection with the promotion of a dental plate in interstate commerce. In 1937, subsequent to the appearance of the fraud order, the Federal Trade Commission issued a complaint against the National Optical Stores and Dr. Ritholz Optical Company for their activities in connection with the promotion of spectacles. Subsequently the Post Office Department issued a fraud order against the Chicago Dentists, Chicago Dental House and International Dental House for using the mails in the promotion of dental plates. In this fraud order Mr. Benjamin D. Ritholz is mentioned as "one of the proprietors of the above named concerns."

Finally, the name of the individual who signs the current postcard addressed to doctors is not new to the A. M. A. files. A card mailed from Louisville, Ky., on Sept. 28, 1936 read as follows:

Dear Doctor:—We have a proposition for a physician in Louisville. Attractive opportunity netting at least $40.00 per week. Call, wire or telephone

B. Sherman
Brown Hotel
Louisville, Ky.

The Bureau of Investigation was informed by the State Department of Health of Kentucky at that time that this man represented the National Optical Stores Company of Chicago.

In March 1936 a note was mailed to some Ohio physicians from the address of the Ritholz Optical Company Building:

Dear Doctor:—We have an unusual proposition for an oculist which will require full time away from his office. The remuneration will be at least $40.00 per week. The proposition is in Ohio. Wire or Telephone MONroe 2148 charges collect.

Sincerely yours,

L. Gerew
1148 W. Chicago Ave.
Chicago, Ill.

By engaging repeatedly in such practices, these concerns have shown their total disregard for the welfare of the American people and their desire to make a profit at the expense of the eyesight of the citizens of this country. Their effrontery in attempting to engage unsuspecting physicians to promote their activities is astounding. An ethical physician would not give the slightest consideration to alining himself with such an outfit.

Current Comment

AMERICAN MEDICAL ASSOCIATION ON TRIAL

In the Organization Section of this issue of THE JOURNAL begins the report of the trial on the indictment of the American Medical Association, the District of Columbia Medical Society, the Harris County Medical Society, the Washington Academy of Surgery and many individual physicians, which has been the subject of great medical interest since it was first filed in 1939. The report here published, while not verbatim, is sufficiently inclusive to supply readers with a full account of the proceedings. Indeed the statements to the jury by the attorneys for the prosecution and for the defense are given almost in toto because these two statements seem to indicate the nature of the procedure to be followed. Indications at the time when the trial began were for a duration of from four to six weeks. It is proposed week by week to present the transcript of as much of the evidence as can be made available, considering the difficulties of transcription and preparation of the material.

TRANSMISSION OF BACTERIA IN VENTILATING SYSTEMS

In present day air conditioning systems 90 per cent of the cooled air is often recirculated. The redistribution of air from an infected space to noninfected areas might conceivably become a factor in the spread of disease. In a recent study [1] of the role of ventilating systems in the transmission of micro-organisms, bacteria (B. subtilis spores), which can be readily distinguished from other organisms usually found in air, were introduced in two different ventilating systems and the distribution of the spores was studied. The first ventilating system, which was provided with a paper-tissue filter, was located in a small auditorium. In one instance the spores were introduced beyond the filter and were thus not filtered, and in another experiment the spores were introduced in front of the filter and the air carrying them was filtered before being circulated. Fifteen minutes after the spores were introduced beyond the filter, analyses indicated the presence of 21.9 organisms to 10 cubic feet of the air in the auditorium. One hour after the spraying of the spores no organisms could be found in the air. Fifteen minutes after spraying spores in front of the filters only 3.7 organisms were present in 10 cubic feet of the air and after an hour these too had disappeared. In another series of experiments spores were introduced at different points in the ventilating system of a large building. Analyses of the air in two rooms of the building showed a maximum concentration of organisms during the spraying, which in these experiments lasted for a twenty minute period or during a short period (one half hour) thereafter. The number of organisms then decreased rapidly and within a relatively short time the count returned to a normal level. This rapid decrease is attributable to the dilution factor, and to the action of the filter, as well as to the loss occasioned by surfaces such as the walls and floor. These experiments were made under the most favorable conditions for the transmission of bacteria in ventilating systems, the number of spores being far in excess of that which might be possibly expected to occur normally and the spraying being done at advantageous points, and they demonstrate that bacteria may be spread in this way, although the menace seems slight. The problem merits further study from the point of view of public health.

1. Dalla Valle, J. M., and Hollaender Alexander: A Study of the Role of Ventilating Systems in the Transmission of Bacteria, Pub. Health Rep. **55**: 1268 (July 12) 1940.

THE RADIO AND HIGH FREQUENCY APPARATUS

Recently THE JOURNAL called attention to the discussions now going on between members of the medical profession, including representatives of the Council on Physical Therapy of the American Medical Association, and government officials relative to suitable manufacture or control of high frequency apparatus which interferes with radio reception. In Great Britain it has been found desirable in the prosecution of the war to place governmental restrictions on the use of such apparatus. It is now necessary in that country for any person with such apparatus in his possession to have a permit from the postmaster general for its operation. Apparatus included under the control is diathermy and electromedical equipment which uses valves or spark coils. The unauthorized possession of such apparatus constitutes an offense under the defense regulations. The purpose of control is obviously to reduce the number of sources of electrical disturbance so that proper use of radio as a defense mechanism may continue.

VETERINARY MEDICINE ADVANCES

The increasingly scientific and technical character of veterinary medicine becomes apparent with the appearance of the first issue of the *American Journal of Veterinary Research*.[1] This medium was not established for the publication of surplus technical material. It is planned primarily to reflect some of the newer investigations in the field of veterinary medicine which now emanate not only from divisions of the government and of the state universities which are concerned with veterinary medicine but also from individual practitioners. The first number of this periodical—that for October 1940—contains articles on Brucella abortus vaccine, the use of soaps for destroying the streptococci of mastitis as well as research on various infections confined to animals. Some of the contents are concerned with the effect of diet on internal parasites and with ascorbic acid. There are other articles dealing with circulation, respiration and glandular changes in animals. Since much of this research may be of significance to human medicine, it is planned to index the contents of this periodical regularly in the *Quarterly Cumulative Index Medicus*.

1. American Journal of Veterinary Research, published by the American Veterinary Medical Association, 600 South Michigan Avenue, Chicago. Subscription price, $4 annually.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

WAR DEPARTMENT

The following additional medical reserve corps officers had been ordered to extended active duty by the War Department, Washington, D. C., up to January 24:

ABLE, LeGrand Guerry, 1st Lieut., Spartanburg, S. C.
BAKER, Augustus Lynn, Major, Dover, N. J.
BEINAR, Peter Joseph, 1st Lieut., Chicago.
BRANNAN, Max, 1st Lieut., Coral Gables, Fla.
CALDEN, Willard S., 1st Lieut., Berkeley, Calif.
CASE, Robert Bowen, 1st Lieut., Oakland, Calif.
FRENCH, Adam James, 1st Lieut., Ann Arbor, Mich.
GOAD, Lloyd Henry, 1st Lieut., Oklahoma City.
GREEN, Sydney Harold, 1st Lieut., Alcatraz, Calif.
GREENSTEIN, Carl, 1st Lieut., Sheboygan, Wis.
GUYER, Herbert Bernard, 1st Lieut., Dorchester, Mass.
HAMLIN, Percy Gatling, Major, Williamsburg, Va.
HANNA, John Thomas, Major, Burlington, Iowa.
HARRISON, Charles Samuel, 1st Lieut., Clarksburg, W. Va.
HEIN, Walter Francis, Captain, Williams, Ariz.
HELMING, Oscar Clemens, 1st Lieut., La Jolla, Calif.
HERBERT, William Chapman, 1st Lieut., Spartanburg, S. C.
HOWARD, William Templeton, 1st Lieut., Covington, Tenn.
ICE, William Henry, Captain, Los Angeles.
JOHNSON, Maurice Eugene, Captain, Pleasant, W. Va.
JOHNSON, Neill, 1st Lieut., Stockton, Calif.
JONES, Harry Douglas, 1st Lieut., Nashville, Tenn.
KAUFMANN, Maurice, Captain, Cumberland, Ky.
KESCHNER, Harold Walton, 1st Lieut., New York.
LANGSDORF, Gordon C., 1st Lieut., San Leandro, Calif.
LEVIN, Grant, 1st Lieut., New York.
LEWISON, Edward Frederick, 1st Lieut., Baltimore.
LITTLE, William Wilbur, 1st Lieut., Washington Island, Wis.
LOKEN, Selmer Milo, 1st Lieut., St. Paul.
LYON, Edward, Jr., 1st Lieut., Williamsport, Pa.
MAGILL, Herbert Kelvin, 1st Lieut., Baltimore.
McCANDLESS, Garrett Clair, Captain, Franklin, Pa.
McCAULEY, Lewis Ross, 1st Lieut., Punxsutawney, Pa.
MOXNESS, Bennie Arthur, Lieut. Col., West Hartford, Conn.
PAULL, Ross, Major, La Jolla, Calif.
RAMO, Leon, Captain, Spivak, Colo.
RICKLES, George Abraham, 1st Lieut., Fort Steilacoom, Wash.
SHEA, Andrew W., 1st Lieut., Minneapolis.
SHEA, John D., 1st Lieut., Denver.
SIMS, John A., 1st Lieut., Colorado Springs, Colo.
SMITH, Frederick James Cunningham, 1st Lieut., Ardmore, Okla.
SNYDER, John Mendenhall, Captain, Rochester, Minn.
STERN, Siegfried, 1st Lieut., New Rochelle, N. Y.
WARREN, John Curtis, 1st Lieut., Bicknell, Ind.
WOODRUFF, Robert, 1st Lieut., Rochester, Minn.

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty with the regular army by the Commanding General, First Corps Area, since January 24. The First Corps Area comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut.

BEEAKER, Vincent H., Lieut., Lewiston, Me., Fort Benning, Ga.
BROWN, Abe A., Major, Providence, R. I., Fort Benning, Ga.
CALCAGNI, Oscar H., Lieut., Morrisville, Vt., Fort Benning, Ga.
CANTER, Bernard, Lieut., Springfield, Mass., Fort Benning, Ga.
CARROLL, Francis B., Lieut., Great Barrington, Mass., Fort Benning, Ga.
COEN, William B., Lieut., Springfield, Mass., Army Medical Center, Washington, D. C.
CRANE, James E., Lieut., Stamford, Conn., Fort Benning, Ga.
CRISCUOLO, Joseph A., Lieut., New Haven, Conn., Fort Benning, Ga.
FENNO, Frederic R., Lieut., Brookline, Mass., Camp Edwards, Falmouth, Mass.
FULLER, Richard C., Lieut., Saxtons River, Vt., Fort Benning, Ga.
GOGGIO, Alfredo F., Lieut., Boston, Hq. F. A. C. Army Base, Boston.
GOLDMAN, Harry, Lieut., North Adams, Mass., Fort Benning, Ga.
HADLER, Arthur J., Lieut., Boston, Fort Benning, Ga.
KAVANAH, James S., Lieut., Methuen, Mass., Fort Devens, Mass.
LENTINO, Joseph W., Lieut., Clinton, Mass., Fort Benning, Ga.
LEVY, Phillip E., Lieut., Milford, Mass., Fort Benning, Ga.
LUCKNER, Wendelin G., Lieut., Stafford Springs, Conn., Fort Benning, Ga.
METCALF, John Thorpe, Captain, Lubec, Maine, Fort Devens, Mass.
NEWTON, Aaron W., Lieut., Greenfield, Mass., Fort Benning, Ga.
PRIGOT, Aaron, Lieut., Roxbury, Mass., Fort Benning, Ga.
RATTENNI, Arthur, Lieut., Providence, R. I., Army Medical Center, Washington, D. C.
WHELAN, Edmund L., Lieut., East Boston, Mass., Fort Benning, Ga.
ZENTGRAF, Leo Paul, Lieut., Belmont, Mass., Fort Devens, Mass.

Orders Revoked

The order of the following medical reserve officer has been revoked:

WITTIG, Joseph E., Lieut., West Warwick, R. I.

SECOND CORPS AREA

The following additional medical reserve corps officers had been ordered to active duty by the Commanding General, Second Corps Area, up to January 31. The Second Corps Area comprises the states of New York, New Jersey and Delaware.

BAGNER, Alan B., 1st Lieut., Jackson Heights, N. Y., Camp Livingston, La.
BEDELL, Harold, 1st Lieut., Long Island, N. Y., Fort Dix, N. J.
BELLANTONI, Adolph J., 1st Lieut., New York, Fort Hamilton, N. Y.
BERGAMINI, Herbert M., Major, New York, Carlisle Barracks, Pa.
BERGER, Morton, 1st Lieut., Howard Beach, N. Y., Fort Dix, N. J.
BERNSTEIN, Isidor, 1st Lieut., Brooklyn, Camp Livingston, La.
BOLKER, Abraham, 1st Lieut., Brooklyn, Camp Shelby, Miss.
BOTWIN, Nathan, 1st Lieut., New York, Fort McClellan, Ala.
BRIGNOLA, Gerald C., 1st Lieut., Hoboken, N. J., Fort Jay, N. Y.
CALABRESE, Edward St. J., 1st Lieut., Florida, N. Y., Camp Livingston, La.
CANTOR, Philip J., 1st Lieut., Brooklyn, Camp Shelby, Miss.
CHAINSKI, William A., 1st Lieut., Maspeth, N. Y., Camp Shelby, Miss.
COLONNA, Anthony R., 1st Lieut., Brooklyn, Fort McClellan, Ala.
DAUS, Milton J., Captain, Watkins Glenn, N. Y., Fort Ontario, N. Y.
DIASIO, Joseph S., Major, New York, Fort Hancock, N. J.
DICK, Morris M., 1st Lieut., New York, Fort Dix, N. J.
EISENBERG, David S., Captain, Port Byron, N. Y., Fort Benning, Ga.
ELSTEIN, Leo Herman, 1st Lieut., New York, Camp Shelby, Miss.
FALLER, Harry R., 1st Lieut., Port Jarvis, N. Y., Camp Livingston, La.
FOWLER, John D., Lieut. Col., Rochester, N. Y., Carlisle Barracks, Pa.
FRANKEL, Israel A., 1st Lieut., Bronx, N. Y., Camp Livingston, La.
GARRETT, John L., 1st Lieut., Brooklyn, Camp Livingston, La.
GERSH, Irving, 1st Lieut., New York, Fort Dix, N. J.
GOLDBLOOM, Abraham A., Major, New York, Carlisle Barracks, Pa.
GRECO, Gabriel F., 1st Lieut., Richmond Hill, N. Y., Camp Livingston, La.
GREENBERG, Samuel, 1st Lieut., Brooklyn, Fort Dix, N. J.
HAUER, Emanuel, 1st Lieut., New York, Camp Livingston, La.
HIXSON, Edward G., 1st Lieut., Oneida, N. Y., Fort Ontario, N. Y.
JACOBS, Matthew H., 1st Lieut., Brooklyn, Camp Livingston, La.
KAHANER, Jack R., 1st Lieut., Mount Vernon, N. Y., Camp Livingston, La.
KARPENSKI, Stephen J., Captain, Auburn, N. Y., Fort Benning, Ga.
KEMPNER, Ivan, 1st Lieut., Brooklyn, Camp Edwards, Mass.
KLEIN, Lawrence A., Captain, Rochester, N. Y., Fort Ontario, N. Y.
KLEIN, Sam I., 1st Lieut., Brooklyn, N. Y., Camp Livingston, La.
KOGEL, Marcus D., Major, Jamaica, L. I., N. Y., Carlisle Barracks, Pa.
KRAUS, Daniel M., 1st Lieut., New York, Camp Livingston, La.
LEFF, William A., 1st Lieut., Newark, N. J., Fort Benning, Ga.
LEIGH, Ted F., 1st Lieut., New York, Fort McClellan, Ala.
LILIEN, Milton, 1st Lieut., Newark, N. J., Fort Benning, Ga.
LIPKOFF, Clarence J., 1st Lieut., New York, Camp Livingston, La.
MASSUCCO, Frank J., 1st Lieut., Port Chester, N. Y., Fort Dix, N. J.
MAZAR, Steven A., Captain, Binghamton, N. Y., Fort Benning, Ga.
MILLER, Leo R., 1st Lieut., New York, Fort Devens, Mass.
NEUSTADTER, Arnold, 1st Lieut., Flushing, L. I., N. Y., Camp Livingston, La.
PACKARD, E. N., Lieut. Col., Saranac Lake, N. Y., Fort Dix, N. J.
PIAZZA, Thomas L., Captain, Albany, N. Y., West Point, N. Y.

PROTZMAN, Thomas B., Major, Englewood, N. J., Fort Monmouth, N. J.
REIF, Irving L., 1st Lieut., Brooklyn, Fort Dix, N. J.
SACHS, Elihu M., 1st Lieut., New York, Camp Livingston, La.
SEIDEMANN, Irving, 1st Lieut., New York, Fort Dix, N. J.
SETTEL, Edward, 1st Lieut., Brooklyn, Fort Dix, N. J.
SHAPIRO, Sydney H., 1st Lieut., New York, Camp Livingston, La.
SHLESINGER, Julius H., 1st Lieut., College Point, N. Y., Fort Dix, N. J.
SOLOMON, Stanley E., Captain, New York, Fort Dix, N. J.
SPERRAZZA, Augustine J., 1st Lieut., Astoria, L. I., N. Y., Fort Dix, N. J.
SPITZER, Lawrence L., 1st Lieut., New York, Camp Livingston, La.
STEYAART, Charles L., Captain, Lyons, N. Y., Fort Ontario, N. Y.
STROBINO, Erastus E., Captain, Rochester, N. Y., Fort Ontario, N. Y.
TAUBER, Max, 1st Lieut., Lynbrook, N. Y., Plattsburg Barracks, N. Y.
TEPPER, Julius, 1st Lieut., Sunnyside, N. Y., Fort Dix, N. J.
TONTAR, Silvio, 1st Lieut., Port Chester, N. Y., Fort Dix, N. J.
TORNAMBE, Paul R., 1st Lieut., New York, Fort Dix, N. J.
TURETSKY, Samuel, 1st Lieut., Brooklyn, Fort Dix, N. J.
TYLAR, Norman E., Captain, Windsor, N. Y., West Point, N. Y.
WEISS, Frank, 1st Lieut., Yonkers, N. Y., Fort Dix, N. J.
WEISS, Murray Arthur, Major, New York, Fort Monmouth, N. J.
WERTER, Nathan, 1st Lieut., Brooklyn, Fort Dix, N. J.

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Seventh Corps Area. The Seventh Corps Area comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas, and Wyoming.

BARGER, John Alexander, 1st Lieut., St. Louis, Camp Joseph T. Robinson, Ark.
BRILLHART, Everett Guy, 1st Lieut., Shelby, Neb., Camp Joseph T. Robinson, Ark.
BURLINGAME, David Albert, 1st Lieut., Minneapolis, William Beaumont Gen. Hosp., El Paso, Texas.
DOSS, William Norman, 1st Lieut., Leon, Iowa, Camp Murray, Wash.
HABERER, Justin Jerome, 1st Lieut., St. Louis, Fort Ord, Presidio of Monterey, Calif.
HARMAN, Leo Dow, Major, Pawnee City, Nebr., Hot Springs, Ark.
HAWKINSON, Raymond Paul, Captain, Robbinsdale, Minn., Fort Des Moines, Iowa.
HENDERSON, Richard Gray, 1st Lieut., St. Louis, El Paso, Texas.
HENDERSON, Robert Wesley, Captain, Bismarck, N. D., Camp Joseph T. Robinson, Ark.
HOLMES, Charles King, Lieut. Col., Minneapolis, Hot Springs, Ark.
JEWELL, Iverson Howard, Major, Paris, Ark., Hot Springs, Ark.
KEIM, John Harry, 1st Lieut., Kennett, Mo., Fort Francis E. Warren, Wyo.
McCOMAS, Marmaduke D., Captain, Courtland, Kan., Fort Leavenworth, Kan.
MULDOON, John Kennedy, Major, Omaha, Fort Ord, Calif.
POTASHNICK, Robert, 1st Lieut., St. Louis, Camp Grant, Ill.
RENICK, Fred Taylor, Captain, Lawrence, Kan., Fort Sam Houston, Texas.
ROBERTS, John Richard, 1st Lieut., Brentwood, Mo., El Paso, Texas.
ROSENFIELD, Abraham Benjamin, Captain, Hibbing, Minn., Hot Springs, Ark.
SARTORIUS, Herman Carl, Captain, Garden City, Kan., Fort Sam Houston, Texas.
SATHER, Russell Olay, Captain, Crookston, Minn., El Paso, Texas.
SELMAN, Ralph Jackson, Lieut. Col., Ottumwa, Iowa, El Paso, Texas.
SHEINKOPF, Jacob Allan, Captain, Minneapolis, Hot Springs, Ark.
SMITH, Herman Joseph, 1st Lieut., Des Moines, Iowa, Fort Ord, Presidio of Monterey, Calif.
SMITH, Louis Joseph, 1st Lieut., New Madrid, Mo., El Paso, Texas.
SHELTON, Harold Jordan, Captain, St. Louis, Hot Springs, Ark.
WEIR, Don Clair, 1st Lieut., Griswold, Iowa, El Paso, Texas.

Orders Revoked

ADLER, Morton William, 1st Lieut., Vandalia, Mo., Fort Snelling, Minn.
ATKINSON, George Stanford, 1st Lieut., White Earth, Minn., Fort Snelling, Minn.
BETTLER, Philip Leon, 1st Lieut., Sioux City, Iowa, Rolla, Mo.
BORGMEYER, Henry John, 1st Lieut., Dodge, Neb., Fort Leonard Wood, Mo.
BRANCH, James W., 1st Lieut., Hope, Ark., Camp Grant, Ill.
BRYAN, Emery Clarence, 1st Lieut., Erie, Kan., Jefferson Barracks, Mo.
CONLIN, Leo V. James, 1st Lieut., St. Paul, Carlisle Barracks, Pa.
GRAY, Herschel Frederick, 1st Lieut., Little Rock, Ark., Fort Snelling, Minn.
HAINES, Diedrich Jansen, 1st Lieut., Des Moines, Iowa, Camp Grant, Ill.
HUDGEL, Lawrence Eugene, 1st Lieut., North Platte, Neb., Carlisle Barracks, Pa.
JOHNSON, Marvin A., 1st Lieut., Plainview, Neb., Fort Snelling, Minn.
LOTMAN, Harry Alfred, 1st Lieut., Lincoln, Neb., Carlisle Barracks, Pa.
MacLEOD, Sherburne, 1st Lieut., Wichita, Kan., Fort Snelling, Minn.
MARTIN, Melvin Cecil, Captain, Newton, Kan., Carlisle Barracks, Pa.
MILLER, Richard White, 1st Lieut., Fayetteville, Ark., Jefferson Barracks, Mo.
NEDERHISER, Morgan Ira, 1st Lieut., Cascade, Iowa, Carlisle Barracks, Pa.
SHERMAN, Kenneth Eugene, 1st Lieut., Sturgis, S. D., Carlisle Barracks, Pa.
SIMONTON, Kinsey MacLeod, 1st Lieut., Rochester, Minn., Camp Grant, Ill.
SMITH, Frederick Abbott, 1st Lieut., Rochester, Minn., Camp Grant, Ill.
STERNHILL, Isaac, Captain, Council Bluffs, Iowa, Camp Grant, Ill.
STILL, Richard Mathias, 1st Lieut., Lincoln, Neb., Camp Grant, Ill.
STRATHERN, Carleton S., 1st Lieut., St. Peter, Minn., Camp Grant, Ill.
UIHLEIN, Alfred, 1st Lieut., Rochester, Minn., Camp Grant, Ill.
VAUGHN, Louis Dysart, 1st Lieut., Rochester, Minn., Camp Grant, Ill.

EIGHTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Eighth Corps Area. The Eighth Corps Area comprises the states of Colorado, Arizona, New Mexico, Oklahoma and Texas.

ADAMS, Clinton E., Captain, Abilene, Texas, Fort Bliss, Texas.
ALEXANDER, Arthur B., 1st Lieut., Spur, Texas, Fort Sill, Okla.
APPEL, Myron Henry, 1st Lieut., Alice, Texas, Fort Sam Houston, Texas.
BADT, Morris B., Lieut. Col., Fort Worth, Texas, Camp Hulen, Texas.
BAILEY, William H., Lieut. Col., Oklahoma City, Fort Sill, Okla.
BOYD, Granberry Davis, Jr., Captain, San Antonio, Texas, Fort Sam Houston, Texas.
BOYKIN, James M., 1st Lieut., Taft Texas, Station Hospital, Fort Sam Houston, Texas.
BOYSEN, Arthur E., Captain, McAllen, Texas, Fort Sam Houston, Texas.
CLAUNCH, Dewitt, 1st Lieut., Comanche, Texas, Fort Sill, Okla.
COHEN, Matthew, 1st Lieut., Phoenix, Ariz., Fort Sill, Okla.
DAYWITT, Alvin L., Captain, Denver, Fort Sill, Okla.
EWING, Ferdinand Stanley, Captain, Sinton, Texas, Fort Sam Houston, Texas.
FRIEDLAND, Joseph D., 1st Lieut., Denver, Fort Sill, Okla.
FRAWLEY, John Thomas, 1st Lieut., McAllen, Texas, Fort Sill, Okla.
GERODETTI, Orlando F., Captain, San Antonio, Texas, 45th Division, Fort Sill, Okla.
GOEN, Rayburne W., 1st Lieut., Denver, 45th Division, Fort Sill, Okla.
GREEN, LaThaggar, Jr., 1st Lieut., Muleshoe, Texas, Fort Sill, Okla.
HANNA, William Ray, 1st Lieut., Ladonia, Texas, Camp Hulen, Texas.
HAYNES, Henry M., Jr., 1st Lieut., Gatesville, Texas, Fort Sill, Okla.
HESTAND, Haskell E., 1st Lieut., Odessa, Texas, Fort Sill, Okla.
HOLLIS, Lynn E., 1st Lieut., Hollis, Okla., Fort Sam Houston, Texas.
HOOKER, Lyle, 1st Lieut., Houston, Texas, Camp Hulen, Texas.
JONES, William Ansel, Captain, Whiteriver, Ariz., Fort Sam Houston, Texas.
JORNS, Cecil F., 1st Lieut., Houston, Texas, Fort Sam Houston, Texas.
KENNEDY, Virgil N., Captain, Newkirk, Okla., Fort Sill, Okla.
KING, Everett G., 1st Lieut., Duncan, Okla., Fort Sill, Okla.
KIRKPATRICK, Louis P., 1st Lieut., Houston, Texas, 45th Division, Fort Sill, Okla.
MATTHEWS, Choice B., 1st Lieut., Kerrville, Texas, Fort Sam Houston, Texas.
McCARTY, David Wilson, Jr., 1st Lieut., Longmount, Colo., Fort Sam Houston, Texas.
McMILLAN, George Sherill, 1st Lieut., Hurley, N. Mex., Fort Sill, Okla.
MOORE, Masters H., 1st Lieut., Tyler, Texas, Fort Sill, Okla.
NEWMAN, Meshach H., 1st Lieut., Shattuck, Okla., Fort Sill, Okla.
OWERS, Albert, 1st Lieut., Temple, Texas, Fort Sam Houston, Texas.
PAGE, Donald F., 1st Lieut., Boulder, Colo., Fort Bliss, Texas.
PRYOR, Victor W., 1st Lieut., Holdenville, Okla., Fort Sill, Okla.
RAFF, Joseph Samuel, Captain, Madill, Okla., Fort Sill, Okla.
RHEA, Robert L., Jr., 1st Lieut., San Antonio, Texas, Fort Sam Houston, Texas.
RICKS, James Ralph, Jr., 1st Lieut., Oklahoma City, Fort Sill, Okla.
RIKE, Bernard J., 1st Lieut., Wagoner, Okla., 45th Division, Fort Sill, Okla.
RIKLIN, Henry Hyman, 1st Lieut., Safford, Ariz., Fort Sam Houston, Texas.
RITCH, Allen T., Major, San Antonio, Texas, Fort Sam Houston, Texas.
ROBERTSON, Adolph H., 1st Lieut., Miles, Texas, 45th Division, Fort Sill, Okla.
ROBINETT, James Bradley, Jr., 1st Lieut., Houston, Texas, Fort Sill, Okla.
ROSS, Lloyd I., 1st Lieut., San Antonio, Texas, Fort Sam Houston, Texas.
SCHILLER, Nelson Lorenz, Captain, Brenham, Texas., Fort Bliss, Texas.
SHOTTS, Chester C., 1st Lieut., Pleasanton, Texas, Fort Sam Houston, Texas.
SHUPE, Reed Dalton, Captain, Phoenix, Ariz., Fort Bliss, Texas.
SIEVERS, Walter Andrew, 1st Lieut., Gonzales, Texas, Camp Grant, Ill.
SMITH, Leslie B., 1st Lieut., Phoenix, Ariz., Fort Sam Houston, Texas.
WEINER, Harry Ida, 1st Lieut., Cave Creek, Ariz., Fort Bliss, Texas.
WOODALL, John B., 1st Lieut., Kerrville, Texas, Camp Hulen, Texas.
WOODARD, Thad L., 1st Lieut., Dallas, Texas., Fort Brown, Texas.
WOODS, Haddon Benjamin, Captain, Refugio, Texas, Fort Sill, Okla.
WOODSON, Orville McClure, 1st Lieut., Poteau, Okla., Fort Sill, Okla.
WORD, Lee B., 1st Lieut., Bartlesville, Okla., Fort Sill, Okla.

Orders Revoked

Orders on the following officers, reported previously, have been revoked:

BADEN, Ervin Edgar, 1st Lieut., Raymondville, Texas.
BAMBERGER, Paul J., 1st Lieut., Climax, Colo.
BARNES, Johnson Peyton, 1st Lieut., Houston, Texas.
BICKLEY, Estill T., 1st Lieut., Corpus Christi, Texas.
BROWN, Robert N., 1st Lieut., Denver.
BUCHTEL, Henry A., 1st Lieut., Denver.
CARSON, John M., 1st Lieut., Shawnee, Okla.
CONTE, Raphael, 1st Lieut., Houston, Texas.
DAVIS, Charles Q., Major, Houston, Texas.
DeVORE, Neal N., Captain, Houston, Texas.
EWERT, William A., 1st Lieut., Kingsville, Texas.
FRENCH, A. James, 1st Lieut., Ann Arbor, Mich.
GALLAHER, Frank C., 1st Lieut., Shawnee, Okla.
GLASIER, Wm. Albert, 1st Lieut., Carlsbad, N. M.
GOEN, Rayburne W., 1st Lieut., Denver.
JAFFA, Bertram B., Captain, Denver.
JONES, Edmund D., Captain, Beaumont, Texas.
JOHNSTON, Lawrence W., 1st Lieut., Terrell, Texas.
KIRKPATRICK, Louis P., 1st Lieut., Houston, Texas.
LoBELLO, Leon, 1st Lieut., Dallas, Texas.
McMILLAN, James M., 1st Lieut., Vinita, Okla.
MITCHELL, Holland C., Captain, San Antonio, Texas.
NICHOLSON, R., Jr., Major, San Antonio, Texas.
ROUTON, Benj. C., 1st Lieut., Oklahoma City.
STURM, Charles E., Captain, San Antonio, Texas.
WALKER, Glen H., 1st Lieut., Coolidge, Ariz.
WILLIS, Raymond S., Captain, Dallas, Texas.

CORRECTION

Lieutenant Jeter.—In THE JOURNAL, January 18, page 239, under Eighth Corps Area, in the list of medical reserve officers ordered to active duty, the name Peter, James R., 1st Lieut., Ennis, Texas, Fort Bliss, Texas, should have been Jeter, James R.

NINTH CORPS AREA

The following additional medical reserve corps officers had been ordered to extended active duty by the Commanding General, Ninth Corps Area, up to January 26. The Ninth Corps Area comprises the states of Washington, Montana, Oregon, Nevada, Utah, California and Idaho.

ALDEN, Warren H., 1st Lieut., John Day, Ore., Fort Lewis, Wash.
ALDRICH, Albert T., 1st Lieut., Los Angeles, Camp San Luis Obispo, Calif.
BARAFF, Albert A., Captain, Hollywood, Calif., Nacimiento, Calif.
BENNETT, Louis C., Captain, Los Angeles, Nacimiento, Calif.
BISWELL, Roger, 1st Lieut., Baker, Ore., Fort Lewis, Wash.
BURNS, Edgar M., 1st Lieut., Portland, Ore., Fort Lewis, Wash.
BURNS, John K., 1st Lieut., Spokane, Wash., 3d Division, Fort Lewis, Wash.
CAMPISI, Dominic A., 1st Lieut., San Jose, Calif., Camp San Luis Obispo, Calif.
CANIPAROLI, Sante D., Captain, Portland, Ore., 3d Division, Fort Lewis, Wash.
COMROE, Leon B., 1st Lieut., San Francisco, Camp San Luis Obispo, Calif.
COUGHLIN, William F., Captain, Carmel, Calif., Fort Ord, Calif.
DITTO, Hugh H., 1st Lieut., Los Angeles, Nacimiento, Calif.
DENNEN, Charles, 1st Lieut., Seattle, 29th Engineer Battalion, Portland, Ore.
DOROSHOW, George D., Captain, Huntington Park, Calif., Nacimiento, Calif.
ESPERSEN, Ruben W., Captain, Klamath Falls, Ore., Fort Lewis, Wash.
FISH, Lester W., Major, Los Angeles, Nacimiento, Calif.
GOLDENBERG, Julius L., 1st Lieut., Los Angeles, Camp San Luis Obispo, Calif.
GOURSON, Nathaniel E., 1st Lieut., Maywood, Calif., Camp San Luis Obispo, Calif.
GUNDERSON, Ernest O., 1st Lieut., Berkeley, Calif., Fort Lewis, Wash.
GUTHRIE, Myron S., 1st Lieut., Bakersfield, Calif., Camp San Luis Obispo, Calif.
HAFT, Stanley S., 1st Lieut., Los Angeles, Nacimiento, Calif.
HALLER, Austin P., 1st Lieut., Los Angeles, Nacimiento, Calif.
HANSEN, Alex F., 1st Lieut., Long Beach, Calif., Camp San Luis Obispo, Calif.
HARBAUGH, Oril S., Captain, San Diego, Calif., Fort Rosecrans, Calif.
HAVENHILL, Asher D., 1st Lieut., Santa Cruz, Calif., Fort Ord, Calif.
HIGGINS, John W., 1st Lieut., Los Angeles, Camp San Luis Obispo, Calif.
HOLLANDER, Frederick G., 1st Lieut., San Diego, Calif., Fort Rosecrans, Calif.
HOUZVICKA, Otto A., 1st Lieut., San Diego, Calif., Nacimiento, Calif.
HULL, Earl T., Jr., 1st Lieut., Los Angeles, Riverside, Calif.
JOHNSON, Richard P., 1st Lieut., Oakland, Calif., Fort Winfield Scott, Calif.
LAYDEN, Milton, 1st Lieut., Los Angeles, Camp Haan, Riverside, Calif.
LEWIS, Herbert D., 1st Lieut., Hood River, Ore., Fort Lewis, Wash.
McCREARY, James H., 1st Lieut., Los Angeles, Nacimiento, Calif.
MAKOWER, Melvin L., 1st Lieut., Berkeley, Calif., Presidio of San Francisco.
MATSON, James R., 1st Lieut., San Diego, Calif., Torrey Pines, Calif.
MICHENER, John M., 1st Lieut., Pomona, Calif., Camp Haan, Riverside, Calif.
MILLS, Victor D., 1st Lieut., The Dalles, Ore., Fort Lewis, Wash.
NICOLA, Quintus, 1st Lieut., Montebello, Calif., Nacimiento, Calif.
PECKHAM, George M., Captain, Oakland, Calif., Presidio of San Francisco.
RASKIND, Robert, 1st Lieut., Los Angeles, Camp Haan, Riverside, Calif.
RUBERSTEIN, Victor G., 1st Lieut., Los Angeles, Camp Haan, Riverside, Calif.
SCHMIDT, Philipp E., Captain, Glendale, Calif., Fort Ord, Calif.
SCHNEIDER, Leo, Captain, Portland, Ore., Fort Lewis, Wash.
SHELTON, Robert M., 1st Lieut., Inglewood, Calif., Nacimiento, Calif.
SKOLLER, Julius, 1st Lieut., Los Angeles, Riverside, Calif.
SMITH, William P., Major, Columbus, Mont., Camp Murray, Wash.
STEINBERG, Saul S., 1st Lieut., Oakland, Calif., Nacimiento, Calif.
TAIT, Arnold C., 1st Lieut., Rosalin, Wash., 3d Division, Fort Lewis, Wash.
TURLEY, Gerald W., 1st Lieut., Goldendale, Wash., Fort Lewis, Wash.
WEINBERG, Samuel J., 1st Lieut., Los Angeles, Nacimiento, Calif.

Relieved from Active Duty or Orders Revoked

DANIELE, Joseph A., 1st Lieut., assigned to Buckho Ranch, Calif., reported on January 18, orders revoked.
YUSKIS, Anton S., 1st Lieut., assigned to 7th Division, Fort Ord, Calif., reported on Dec. 26, 1940, relieved from active duty January 17.

HEALTH REPORT ON UNITED STATES TROOPS

The *Monthly Health Review* for troops in the United States, issued by the Surgeon General's Office, Washington, D. C., for the four weeks ended Oct. 26, 1940, shows that the general admission rate for these troops was 740 per thousand as compared to 566 for the previous month, communicable diseases having been largely responsible for the increase. The rate for the respiratory group of diseases rose to 212.2 from 114.1 for September. Venereal diseases showed a slight decline to 39.1 from 44 for the previous month, being still well above the rate for the same period in the previous year. Two cases of typhoid were reported during the month, one in the Seventh Corps Area and one in the Eighth Corps Area; there was one case of typhus fever in the Fourth Corps Area and one of malta fever in the Ninth Corps Area. The rate for injuries showed an increase over that for September, 119 as compared to 87. The noneffective rate remained low, 21.7. The death rate was 2.61 per thousand. Of the seventy-nine deaths, four were due to adenocarcinoma, one to meningitis, three to tuberculosis, one to pneumonia, two to appendicitis, twenty-three to automobile accidents, twelve to airplane accidents, three to motorcycle accidents, six to suicide, three to homicide and two to drowning.

NEW HOSPITAL AT SCOTT FIELD

A hospital and infirmary and one barracks will be constructed at Scott Field, Ill., at an estimated cost of $450,000, newspapers report. The hospital will have a capacity of two hundred and ninety-five beds and be of the cantonment type, intended to relieve crowding in the present facilities.

SHIPLOAD OF WAR RELIEF SUPPLIES FOR GREECE

Loaded with foodstuffs and other relief supplies purchased through the Congressional appropriation for relief of civilians in war torn nations, and the remainder purchased from Red Cross funds, the Greek steamer *Kassandra Louloudis* has just sailed for Greece with a cargo weighing nearly 9,000 tons, values in excess of $1,000,000. In the cargo are $150,000 worth of hospital and surgical supplies, 1,000,000 quinine tablets, 1,500,000 surgical dressings, 20,000 pounds of woolen yarn, 20,000 pairs of children's shoes, 80,000 suits of underwear, 100,000 blankets, 260,000 garments made by Red Cross volunteer workers, 10,000,000 pounds of foodstuffs and ten small trucks to be used for the distribution of these supplies in Greece under the direction of American Red Cross representatives.

ORGANIZATION SECTION

AMERICAN MEDICAL ASSOCIATION ON TRIAL

THE TRIAL OF THE CASE OF THE UNITED STATES OF AMERICA

VS.

THE AMERICAN MEDICAL ASSOCIATION, A CORPORATION, THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA, A CORPORATION, THE HARRIS COUNTY MEDICAL SOCIETY, AN ASSOCIATION, THE WASHINGTON ACADEMY OF SURGEONS, AN ASSOCIATION, ARTHUR CARLISLE CHRISTIE, COURSEN BAXTER CONKLIN, JAMES BAYARD GREGG CUSTIS, WILLIAM DICK CUTTER, MORRIS FISHBEIN, THOMAS ALLEN GROOVER (DECEASED), ROBERT ARTHUR HOOE, ROSCO GENUNG LELAND, THOMAS ERNEST MATTINGLY, LEON ALPHONSE MARTEL, FRANCIS XAVIER MC GOVERN, THOMAS EDWIN NEILL, EDWARD HIRAM REEDE, WILLIAM MERCER SPRIGG, WILLIAM JOSEPH STANTON, JOHN OGLE WARFIELD JR., OLIN WEST, PRENTISS WILSON, WILLIAM CREIGHTON WOODWARD, WALLACE MASON YATER, JOSEPH ROGERS YOUNG.

This case came on for trial before Associate Justice James M. Proctor and a jury in Criminal Division No. 2 of the District Court of the United States in the District of Columbia at 10 o'clock a. m., Wednesday, February 5.

On behalf of the United States appeared

John H. Lewin, Special Assistant to the Attorney General.
Grant W. Kelleher, Special Assistant to the Attorney General.
George B. Haddock, Special Attorney, Department of Justice.
Edward J. Hickey Jr., Special Attorney, Department of Justice.
Walton Allen, Special Attorney, Department of Justice.
Compton Timberlake, Special Attorney, Department of Justice.

On behalf of defendants Medical Society of the District of Columbia, Washington Academy of Surgeons, Arthur Carlisle Christie, Coursen Baxter Conklin, James Bayard Gregg Custis, William Dick Cutter, Robert Arthur Hooe, Thomas Ernest Mattingly, Leon Alphonse Martel, Francis Xavier McGovern, Thomas Edwin Neill, Edward Hiram Reede, William Mercer Sprigg, William Joseph Stanton, John Ogle Warfield Jr., Wallace Mason Yater and Joseph Rogers Young:

Charles S. Baker.
William E. Leahy.
Warren Magee.

On behalf of defendants American Medical Association, Harris County Medical Society, Morris Fishbein, Rosco Genung Leland, Olin West and William Creighton Woodward:

Edwin M. Burke,
Seth W. Richardson,
Adrien Busick.

On behalf of defendant Prentiss Willson:

John B. Laskey.

The Proceedings

THE COURT:—Gentlemen, I assume you are ready to proceed.

Mr. Burke:—Except, your Honor, before you begin selecting a jury, we would like to present the document that I spoke to you about day before yesterday, for your consideration.

Mr. Magee:—They are the proposed motions, your Honor, with reference to parts of the record.

THE COURT:—I think we could take them up better after the jury is selected. I am anxious, gentlemen, to select a jury so that we may release jurors who are not needed. We have three panels here today. The other courts may need them.

THE COURT:—I want to address a moment the ladies and gentlemen who appear as prospective jurors. There are some seventy-eight of you, three panels; and I wish you all to carefully follow the information which will be given you by way of identification of this case and the parties connected therewith, so that it will not have to be repeated. In the first place, I wish to briefly identify the case as to the parties and as to the names of the defendants; so I will have to ask each individual, as your name is called, to stand and turn toward your right so that the ladies and gentlemen of the jury may see you for a moment. This is a prosecution entitled United States against the American Medical Association, a Corporation Incorporated under the Laws of Illinois and having its office and principal place of business in Chicago; the Medical Society of the District of Columbia, a corporation having its office and principal place of business in the District of Columbia; Harris County Medical Society, an unincorporated association having its office and principal place of business in Houston, Harris County, Texas; Washington Academy of Surgeons, an unincorporated association having its office and principal place of business in the District of Columbia. And then the following named individual defendants, all of whom I understand to be physicians, either of this city or of some other city.

The court called the name of each defendant, who stood as called except as otherwise noted.

THE COURT:—Where is Dr. Conklin? Has he been here?

Mr. Baker:—I heard from him day before yesterday. It seemed then that he had a desperately ill infant on his hands, and that is probably the difficulty.

THE COURT:—He will probably be here. Do you expect him here?

Mr. Baker:—Oh, absolutely.

THE COURT:—Will you call my attention to him as soon as he arrives?

Mr. Baker:—Yes, sir.

. . . . . .

THE COURT:—The indictment against these defendants is for violation of the so-called Sherman Anti-Trust law. Charges against the associations and the individual defendants, in substance, are that, beginning in January, 1937, or shortly thereafter, and continuing to the date of the indictment, which was Dec. 20, 1938, the defendants and Washington hospitals and other persons to the grand jurors unknown combined and conspired together for the purpose of restraining trade in the District of Columbia in the following way: for the purpose of restraining Group Health Association, Inc., in its business of arranging for the provision of medical care and hospitalization to its members and their dependents on a risk-sharing prepayment basis;

For the purpose of restraining the members of Group Health Association, Inc., in obtaining, by cooperative efforts, adequate medical care for themselves and their dependents from doctors engaged in group medical practice on a risk-sharing prepayment basis;

For the purpose of restraining the doctors serving on the medical staff of said Group Health Association, Inc., in the pursuit of their callings;

For the purpose of restraining doctors (not on the medical staff of Group Health Association, Inc.) practicing in the District of Columbia, including the doctors so practicing who are made defendants herein, in the pursuit of their callings;

For the purpose of restraining the Washington hospitals in the business of operating such hospitals.

Counsel representing the United States, will you arise and state your names for the benefit of the jury?

The various lawyers arose and stated their names.

. . . . . .

THE COURT:—Now, ladies and gentlemen of the first panel, that is, of this criminal court, I wish you would follow these questions very carefully, and if your answers cannot properly

be manifested by silence, I wish you would indicate by raising your hands and rising so that you may answer. Before doing so, I wish to have you sworn.

The members of the panels were duly sworn by the Assistant Clerk. The Court then directed questions to the panel.

Do you know any of the defendants whose names have been called?

(Two prospective jurors stood.)

THE COURT:—Will you give your name, please?

Mr. Simmons:—My name is Lloyd J. Simmons.

THE COURT:—Who is it that you know?

Mr. Simmons:—I don't know him personally, but it is Dr. Martel.

THE COURT:—You say you do not know him personally. What is the nature of your acquaintanceship?

Mr. Simmons:—He recently saved the life of my nephew's wife.

THE COURT:—Would that fact in any wise influence you in the consideration and determination of the case if chosen as a juror?

Mr. Simmons:—I think it would.

THE COURT:—You think you would have difficulty in determining the case fairly and impartially, solely upon the basis of the evidence?

Mr. Simmons:—Yes, sir.

. . . . . .

Mr. Porter stated that he was acquainted with Dr. Yater in high school days.

. . . . . .

THE COURT:—Do you still have contact with him in a social way?

Mr. Porter:—No, sir.

THE COURT:—Would that fact in any wise influence you in the consideration and determination of the case if you are drawn as a juror?

Mr. Porter:—No, sir; I don't think so.

THE COURT:—Is any juror acquainted with counsel or any member of the staff representing the Government on the one hand or the defendants on the other?

Mr. Reuben Acton stated that he used to know Mr. Magee, in childhood days, 15 or 20 years ago, but has not had any social or business contacts with him in recent years, and that fact would not in any wise influence him in consideration or determination of the case, if drawn as a juror.

Mr. Edward R. Hammer said that he knew Mr. Leahy socially, but that would not in any wise influence him in consideration or determination of the case, if drawn as a juror.

THE COURT:—Have you formed or expressed any opinion as to the guilt or innocence of the defendants?

Mr. Kenneth S. Barry said he had formed an opinion and that he could not lay it aside and base a verdict impartially upon the evidence.

Mr. Philip P. Keller also definitely formed one and would be embarrassed if drawn as a juror, or would have difficulty in laying aside that opinion.

THE COURT:—Are you related to any person who is a defendant in this case? Do you know of any relationship between you and any of the individual defendants whose names have been mentioned?

Are you related to anyone engaged in the practice of medicine, including doctors, nurses, and hospital officials?

Mr. Hammer stated he had a niece who made her home with his family, employed in Georgetown Hospital.

Mr. Herman Dodek had a cousin, a doctor, whom he saw three or four times a year, and that it might influence him in consideration and determination of the case, if drawn as a juror.

Mr. Simmons also had a niece who is a nurse and thought it might influence him.

Mr. Joseph E. Taylor Sr., has a cousin who is a doctor and thought it might influence consideration and determination of the case. He sees him once a year, about Christmas time.

THE COURT:—Have any of the defendant doctors ever treated you or any one in your immediate family, that is, these doctors whose names have been called?

Mr. Simmons:—Dr. Christie treated our family.

Mr. McNeil:—Dr. Neill performed an operation on my wife.

THE COURT:—How long ago was that?

Mr. McNeil:—Ten years, I guess.

THE COURT:—Would that fact in any wise influence you in your consideration and determination of the case, if drawn as a juror?

Mr. McNeil:—No, sir.

THE COURT:—Are you, or is any member of your immediate family an employee of any doctor, nurse, or hospital?

THE COURT:—Are you related to any of the counsel in the case, that is, any of the attorneys whose names have been mentioned? (No response.)

Have any relations which you have had with persons engaged in the practice of medicine prejudiced you so that you could not impartially try the merits of this case? In other words, have you had any incident arise in your relations with any doctor which might operate to create a prejudice or bias in your mind? (No response.)

Have you any conscientious scruples against convicting doctors of violation of the anti-trust law? (No response.)

Are you acquainted with Mr. Thurman Arnold, who, as you know, is Assistant Attorney General in charge of trust prosecutions? (No response.)

Is any juror a member of Group Health Association or has he or she ever been a member of Group Health Association?

Miss Patterson:—My name is Miss M. Edith Patterson. I am a member of Group Hospitalization.

Mr. Timberlake:—That is a different organization, your Honor.

Mr. Barry:—I am also a member of Group Hospitalization.

Mr. Bieber:—I am a member of Group Hospitalization.

Mr. Irwin:—I am a member of Group Hospitalization.

Mr. Hammer:—I have group hospitalization. I don't know what group it is.

Mr. Simmons:—I belong to an organization.

THE COURT:—What is your organization?

Mr. Simmons:—Group Hospitalization.

Mr. Dodek:—I have a policy in an association.

THE COURT:—Is it a regular life insurance policy?

Mr. Dodek:—It is health and life insurance.

Mr. Magruder:—I belong to Group Hospitalization.

THE COURT:—Is there any member of any family, an immediate relative, such as father, mother, brother, sister, son or daughter, who is or has been a member of Group Health Association? Confine yourselves at present to that particular name—Group Health Association. (No response.)

Is there any member of the panel who is or has been employed since Jan. 1, 1937, in any of the executive branches of the Government of the United States?

Mr. Simmons:—Reconstruction Finance Corporation.

Mr. Horad:—My name is Washington Horad. I am employed by the Post Office Department.

Miss Patterson:—National Guard Bureau, War Department.

Mr. Gage:—My name is Lawrence A. Gage. Veterans Administration.

Mr. Porter:—War Department.

THE COURT:—Has any member of the panel a near relative, such as husband, wife, father, mother, son or daughter, who is or has been since Jan. 1, 1937, employed in any branch of the Government?

Mr. Barry:—Yes, sir. My father is in the War Department.

Mr. Horad:—I have a brother employed in the Commerce Department, in the Census Bureau.

Mr. Dodek:—I have a sister in the Federal Power Commission.

Mrs. O'Neil:—My husband is in the Navy.

Mr. Marggraf:—My name is Charles A. Marggraf. My sister is in the Treasury Department, and I have a brother and sister in the Public Schools of the District of Columbia.

THE COURT:—This relates to branches of the Federal Government. That would be local. Your sister is in which department?

Mr. Marggraf:—The Treasury.

Mr. Facchina:—I have a sister-in-law in the Reconstruction Finance Corporation.

Mr. Hammer:—I have a sister in the Veterans Bureau.

Mr. Barry:—My wife worked in the Civil Service Commission and the Treasury Department.

Mr. Taylor:—I have a mother in the Treasury Department. My step-father is in the Guard Service.

THE COURT:—Where is your step-father?

Mr. Taylor:—The Guard Service at Arlington.

Mr. Walsh:—My sister is in the Federal Bureau of Investigation.

Mrs. McDowell:—I have a sister-in-law in the Agriculture Department.

Mr. Simmons:—I have a brother in the Federal Housing.

THE COURT:—What do you say, gentlemen, if we excuse Mr. Simmons?

We will excuse you from answering any further questions. You need not leave for the moment. I will excuse several others in a few moments.

Mr. Magruder:—My wife is in the Library of Congress.

Mr. Ayers:—I have a brother in the War Department.

Mr. Bieber:—My mother is in the Bureau of Engraving & Printing, and my wife is in the Farm Credit Administration. I also have an uncle in the Navy Yard—the United States Navy Yard, Washington.

Mr. Corens:—My daughter is in the Veterans Bureau. I have a daughter-in-law working in the Navy Yard.

A Prospective Juror:—Do you want to know about sisters-in-law and brothers-in-law?

THE COURT:—I do not think it goes quite that far. The question mentions husband, wife, father, mother, son, or daughter. The next question is: Are you a member of any of the so-called union groups among the Federal employees, such as the American Federation of Government Employees, the United Federal Workers of America, the Federal Personnel Association, the Customs Association, the United Government Workers, Incorporated, and the National Federation of Government Employees? Are you a member of any of those organizations?

Miss Patterson:—Yes.

THE COURT:—Of which one, please?

Miss Patterson:—The American Federation.

THE COURT:—Does any of you have any immediate relatives, such as husband, wife, father, mother, son, or daughter who is or has been since Jan. 1, 1937, a member of any such group?

. . . . . .

THE COURT:—Have you or has any member of your immediate family ever been sued by a physician, or have you sued a physician? In other words, have you ever had any litigation with a physician, one way or the other?

(There was no response.)

THE COURT:—Does any one of you attend or subscribe to the teachings of the Christian Science Church?

(There was no response.)

THE COURT:—Does any one of you or does any one of your immediate relatives, as far as you know, subscribe to the principles of or attend as a member any medical group other than that to which the defendants belong, such as the osteopathic school, the chiropractic school, or the naturopathic school, or any of the so-called schools which offer a plan or a system of medical treatment differing from that of the physicians?

(There was no response.)

THE COURT:—Has any member of the panel ever had any occurrence to him which has aroused in him any antagonistic feelings toward a doctor, a physician, or any group of doctors or physicians? In other words, have you ever had any experience of an unpleasant nature that has left any ill feelings or antagonistic feelings toward a doctor or medical group of any kind?

(There was no response.)

THE COURT:—Have you any other knowledge of this case than that which you have learned in Court, as has just been outlined to you, such as from reading of it in the newspapers.

Mr. Keller:—Just from reading about it in the papers the last few days.

THE COURT:—You have already told us that you have a very fixed opinion?

Mr. Keller:—That is right.

THE COURT:—Then, I shall not pursue this matter any further with you.

Mr. Hammer:—I have so many doctors, nurses, and dentists visiting in my home, and we have talked this case over quite a bit, so I have formed an opinion on it.

THE COURT:—You have already answered it.

Mr. McNeil:—I read about it in the papers only Friday.

THE COURT:—You have not had any previous knowledge of it? You have just read of it in the newspapers?

Mr. McNeil:—Yes.

Mr. Barry:—I have read considerable about it and have discussed it with my friends.

THE COURT:—Is any one of you a patient of any doctor employed by Group Health Association, Incorporated?

Mr. Kelleher, of counsel for the Government, will read the names of those doctors who are associated with Group Health Association, for your information.

Mr. Kelleher:—Dr. Raymond E. Selders; Dr. Richard H. Price; Dr. Mario V. Scandiffio; Dr. Russell F. Cahoon; Dr. Clark P. Halstead; Dr. Charles J. Albright; Dr. Dorn S. Hower; Dr. Robert Crichton; Dr. Gerald Long; Dr. Virginius Dabney; Dr. R. A. Boe; Dr. Allan Lee; Dr. R. Stephen Hulburt; Dr. Charles P. Campbell; Dr. David Dantzic; Dr. Arthur Rosenbaum; Dr. Henry S. Murphy; Dr. K. Charles Latven; Dr. M. H. Levine; Dr. Henry Rolf Brown; Dr. Chase; Dr. Lewis Marshall; Dr. Hutton; Dr. Moretti; Dr. Bradley.

For the last few we do not have their first names or initials.

THE COURT:—You have heard the reading of that list. Are you or have you been a patient of any of the doctors whose names have been called?

(There was no response.)

THE COURT:—Do you know of any close relatives or friends who have been patients of any of those doctors?

Mr. Shelton:—I think he read the name Scandiffio there.

Mr. Kelleher:—That is correct.

Mr. Shelton:—About five years ago he attended my child one time.

THE COURT:—Does that fact in any wise influence you in your consideration or determination of the case as here outlined?

Mr. Shelton:—Not at all.

THE COURT:—How do you spell that doctor's name?

Mr. Lewin:—S-c-a-n-d-i-f-f-i-o.

Mr. Gage:—I have a close friend who was treated by Dr. Murphy in the Group Health.

THE COURT:—Dr. Murphy? Did you call his name?

Mr. Kelleher:—Yes, your Honor; Henry S. Murphy.

THE COURT:—Would that fact in any wise influence you in your consideration or determination of the case, Mr. Gage?

Mr. Gage:—No, your Honor, it would not.

THE COURT:—Have you or has any member of your family been a member of any association or corporation which furnished or arranged for the furnishing of medical service?

Mr. Barry:—I have mentioned mine before.

THE COURT:—Has any juror formed any opinion, or does any one of you now entertain any opinion, with respect to the merits of any group, association, or corporation formed for the purpose of rendering or arranging for the provision of medical service to persons on a prepayment basis?

Mr. Barry:—I mentioned that before.

THE COURT:—Are you or is any member of your family or is any close relative employed by, or have you or they ever been employed by, an organization known as the Twentieth Century Fund?

(There was no response.)

THE COURT:—Or the Good Will Fund—another organization known as the Good Will Fund?

(There was no response.)

THE COURT:—Or by the Edward A. Filene Good Will Fund?

(There was no response.)

THE COURT:—Or by an organization known as the Health Economics Association?

(There was no response.)

THE COURT:—Or by any Federal credit union?

(There was no response.)

THE COURT:—Have you formed any opinion as to the right of any hospital to select physicians for appointment to the regular staff or to the courtesy staff?

(There was no response.)

THE COURT:—Have you formed any opinion as to the right of Washington hospitals to prescribe rules and regulations concerning the care and treatment of patients admitted to hospitals?

(There was no response.)

THE COURT:—Have you formed any opinion as to the right of doctors to form associations and to adopt rules and regulations governing their professional relations with their patients and among themselves?

(There was no response.)

WITNESSES TO BE CALLED BY THE GOVERNMENT

THE COURT:—Now, members of the panel, among the witnesses whom the Government expects to call are the following. I wish you would follow their names, so that you may state whether or not you are acquainted with any of them:

Mrs. Elsie P. Sadler	Dr. R. Stephen Hulburt
Mrs. Mildred H. Cargill	Dr. Allan Lee
Caroline Christopher	Dr. Lee Thompson
Dorothy Cridland	Dr. Francis X. Richardson
Dorothy Ernsting	Dr. Mario Scandiffio
Catherine Hartenburg	Dr. George B. Trible
Mrs. C. E. Johnson	James R. Adams
William C. Kirkpatrick	Miss Peggy O'Connor
Dr. Hugh Cabot	Mary Frances Stuart Maury
Dr. Michael Davis	Colonel Joseph Randall
Dr. Bowman C. Crowell	Anita Richardson
Raymond R. Zimmerman	Mrs. Caroline Reece Epperley
Miss Roseannette Barrent	Dr. V. J. Dardinski
William F. Penniman	William White Anderson, Jr.
Margaret Wilson	Mrs. Harriet A. Austin
Dr. Holman Taylor	Mrs. Edwina Austin Avery
Dr. J. C. Alexander	Mr. Hastings B. Avery
Dr. Walter A. Coole	Charles C. Hardin, Jr.
Dr. A. T. Talley	Mrs. Charles G. Hardin
Mrs. Ira C. Everett	Sherwood K. Booth
Dr. Alan Newmann	Miss Sara Abbott

. . . . . .

After conference of attorneys with the Court concerning the jury the counsel returned to their seats.

The Assistant Clerk:—Jurors, as your names are called, please answer and take seats in the jury box.

(The prospective jurors took seats in the jury box, as follows):

Reuben Acton Jr.	Lawrence A. Gage
Edwin H. Ayers	Washington W. Horad
Edgar W. Bieber	Egbert H. Irwin
Albert E. Burley	Otho T. M. King
Hubert P. Corens	Eugene B. Magruder
Columbus Facchina	Charles A. Marggraf

THE COURT:—Now, gentlemen, the Government has the first challenge. If you have any challenge for cause, you will make the challenge on that basis, if it is for some individual juror; if not, make a peremptory challenge.

Mr. Lewin:—The Government has no challenges for cause.

THE COURT:—Do you care to exercise a peremptory challenge, or are you content with the jury?

Mr. Lewin:—We should like to exercise one peremptory challenge.

THE COURT:—Very well. Name the juror, please.

Mr. Lewin:—Mr. Albert E. Burley.

THE COURT:—Mr. Burley, you will step down, please.

(Mr. Burley was excused.)

The Assistant Clerk:—Mrs. Madelyn M. McDowell.

Mrs. McDowell:—Here.

The Assistant Clerk:—Please take seat No. 4.

(Mrs. McDowell took seat No. 4.)

THE COURT:—Now the defense may exercise a challenge, either for cause or peremptorily. If it is for cause, state that fact.

Mr. Leahy:—May I ask the indulgence of the Court for a moment? Might Mr. Lewin and I approach the bench?

THE COURT:—Yes.

(Counsel for both sides approached the bench and conferred with the Court.)

(After a long conference on the question of lawyers and government employees on juries, the trial continued:)

Mr. Leahy:—The defense will now exercise one of its peremptory challenges. We will excuse Mr. Corens.

The Clerk:—Ernest S. McNeil, please take the seat No. 5.

(Thereupon Ernest S. McNeil took seat No. 5 in the jury box.)

THE COURT:—Now the Government challenge.

Mr. Lewin:—The Government exercised a peremptory challenge and asks that Mr. McNeil be excused.

THE COURT:—Mr. McNeil, you are excused.

The Clerk:—Mrs. Edna Hayes O'Neil, please take seat No. 5.

(Thereupon Mrs. Edna Hayes O'Neil took seat No. 5 in the jury box.)

THE COURT:—Now, it is a defense challenge.

Mr. Leahy:—The defense will now exercise its peremptory challenge and excuse Edgar W. Bieber.

(Thereupon Edgar W. Bieber, being excused, vacated the jury box.)

The Clerk:—Miss M. Edith Patterson, please take seat No. 3.

(Thereupon Miss M. Edith Patterson took seat No. 3 in the jury box.)

THE COURT:—It is the Government's turn.

Mr. Lewin:—The Government passes this time.

THE COURT:—That means you are content?

Mr. Lewin:—We are content, yes, your Honor.

Mr. Leahy:—May we approach the bench for just a moment, your Honor?

THE COURT:—You may.

(Counsel for both sides approached the bench and conferred with the Court.)

. . . . . .

Mr. Leahy:—Now would your Honor ask Miss Patterson whether she had ever been employed in the office of any physician?

THE COURT:—Miss Patterson, will you stand, please?

Have you ever worked for any medical association or any physician, or anything of the sort?

Miss Patterson:—No.

(At the conclusion of the foregoing conference, counsel returned to the trial table, and the trial proceeded as follows:)

Mr. Leahy:—If the Court please, the defense will now excuse Miss Patterson.

(Thereupon Miss M. Edith Patterson, being excused, vacated the jury box.)

The Clerk:—Jesse Ellis Porter, please take seat No. 3.

(Thereupon Jesse Ellis Porter took seat No. 3 in the jury box.)

Mr. Lewin:—May I approach the bench your Honor?

(Counsel for both sides approached the bench and conferred with the Court.)

. . . . . .

THE COURT:—Mr. Porter, will you stand, please? You stated that you knew Dr. Yater. I believe you told us what the nature of that acquaintanceship was, did you not?

Mr. Porter:—During our high school days we were together.

THE COURT:—And you have not had any social or business contact with him since, as I recall?

Mr. Porter:—No.

THE COURT:—That has been how long ago?

Mr. Porter:—Twenty years.

THE COURT:—I believe you stated that would, in no event, enter into your consideration, if you were chosen as a juror?

Mr. Porter:—That is correct, your Honor.

(At the conclusion of the foregoing conference, counsel returned to the trial table and the trial proceeded as follows:)

Mr. Lewin:—The Government is content with this jury.

Mr. Leahy:—Might we approach the bench for just a moment, if your honor pleases?

(Counsel for both sides approached the bench and conferred with the Court.

. . . . . .

THE COURT:—Mr. Gage will be excused and report to Judge Morris's court.

(Thereupon counsel returned to the trial table and the trial proceeded as follows:)

The Clerk:—Henry E. Preston, please take seat No. 7.

(Thereupon Henry E. Preston took seat No. 7 in the jury box.)

THE COURT:—Now it is the Government's challenge.

Mr. Lewin:—The Government asks that Mr. Preston be excused on a peremptory challenge.

THE COURT:—Very well. Mr. Preston will be excused.

(Thereupon Henry E. Preston, being excused, vacated the jury box.)

The Clerk:—Watson V. Shelton, please take seat No. 7.

(Thereupon Watson V. Shelton took seat No. 7 in the jury box.)

THE COURT:—It is the defendant's turn.

Mr. Leahy:—May we approach the bench?

(Counsel for both sides approached the bench and conferred with the Court.)

THE COURT:—Mr. Shelton will be excused; report to Judge Morris's court.

(Thereupon Watson V. Shelton, being excused, vacated the jury box.)

The Clerk:—Joseph F. Taylor Sr. please take seat No. 7.

Thereupon Joseph F. Taylor Sr. took seat No. 7 in the jury box.)

THE COURT:—The Government might express its views now.

Mr. Lewin:—The Government is satisfied with this jury.

Mr. Leahy:—If the Court please, the defense accepts the jury.

THE COURT:—Very well: Swear the jury.

(The jury, constituted as follows: Reuben Acton Jr., 33, salesman; Edwin H. Ayers, 46, gas dealer; Jesse Ellis Porter, 45, assistant engineer; Mrs. Madelyn M. McDowell, 44; Mrs. Edna Hayes O'Neil, 51, housewife; Columbus Facchina, 28, secretary-treasurer of the Charles Facchina Tile Company; Joseph F. Taylor Sr., 38, floor manager; Washington W. Horad, 45, mail carrier; Egbert H. Irwin, 39, salesman; Otho T. M. King, 31, salesman; Eugene B. Magruder, 41, foreman; Charles A. Marggraf, 32, salesman, was duly sworn to try the issues in the case.)

THE COURT:—Now, gentlemen, as you know, we are going to select alternate jurors under the statute.

(The two alternates selected were Lloyd F. Hadeway, 26, assistant theater manager, and Frank E. McCrink, 41, electrician.)

(Thereupon, at 12:55 o'clock p. m., a recess was taken until 1:40 o'clock p. m. of the same day.)

AFTER RECESS

THE COURT:—We are going to examine twenty more which I think ought to be enough to get to the alternates.

The Court addressed the same questions to a new group of prospective jurors.

Mr. Henry Weiss stated he had formed an opinion.

Mr. Hessick had formed an opinion.

Mrs. Etta Richwine had formed an opinion.

Mr. William J. Howard had formed an opinion.

Mrs. Martha Signor Bier had formed an opinion.

Mr. Lee D. Thren said he had pretty strong convictions but hasn't formed an opinion as to the guilt.

Mr. Thomas C. Hammett said Dr. Mattingly attended his brother's family.

Mr. Roland W. Beall knew Dr. Rogers Young and lived in the same small town with Dr. Rogers Young about 20 years ago.

Mr. Thomas G. Aycock knew Dr. Francis X. McGovern professionally. He operated on his son and attended him for about three months, about eight or nine years ago.

Mr. Hammett said Dr. Charles M. Hammett is a first cousin. Also Dr. W. M. Colton, former Dean of Georgetown Dental College, is his uncle, and also a friend of Mr. Leahy's.

Mr. Aycock has a sister-in-law in Public Health Service.

THE COURT:—Have you ever had any relations with a doctor or anyone engaged in the practice of the medical profession which has in any wise prejudiced you against such a person or against the medical profession, so that you feel that you could not act impartially on the merits of the case?

Mr. P. Craig Jones:—Yes.

. . . . . .

THE COURT:—Is any one of you employed by any executive branch of the Government of the United States? And I will add to that, is there anyone who was so employed since January 1, 1937, but who may now be disconnected? Either way, please stand.

(Four members stand.)

THE COURT:—The name, please.

Mr. Ralph F. Raymond:—Ralph F. Raymond.

THE COURT:—What branch or department?

Mr. Raymond:—I work for the Department of Agriculture.

THE COURT:—Agriculture. What is your position?

Mr. Raymond:—I am a photographer.

Mr. James R. Wannan:—Department of the Interior.

THE COURT:—What is the nature of your work?

Mr. Wannan:—Clerk.

Mr. Jesse C. Miller:—Jesse C. Miller.

THE COURT:—You are employed?

Mr. Miller:—Post Office Department.

THE COURT:—What is the nature of your employment?

Mr. Miller:—In connection with specification work on supplies with the Postal Service.

. . . . . .

THE COURT:—Are you, or any member of your family members of any association or corporation, or have you or have they ever been members of any association or corporation which furnished or arranged for the furnishing of medical service?

Mr. William H. Sudduth, Jr.:—I have a sister who belongs to the Group Hospital Association.

THE COURT:—And the other gentleman?

Mr. Beall:—I belong to the Group Hospital Association.

. . . . . .

THE COURT:—There are other organizations which fall under that same question. The next is the Good Will Fund; next, Edward A. Filene Good Will Fund; Health Economics Associaiton. Or, generally speaking, of any Federal Credit Union, are you members or your families or close friends members of any so-called Federal Credit Union?

Mr. Wannan:—Your Honor, I am a member of a Federal Credit Union.

. . . . . .

(At the conclusion of a conference counsel resumed their places at the trial tables, and the trial proceeded.)

The Assistant Clerk:—Jurors, as your names are called, please answer and take your seats at the jury box.

James M. Walsh.

Thereupon—

JAMES M. WALSH,

being called, took a seat near the jury box.

THE COURT:—Mr. Walsh, as you will recall, was on the other panel. He was the last one.

The Assistant Clerk:—Lloyd F. Hadaway.

Thereupon—

LLOYD F. HADAWAY,

being called, took a seat near the jury box.

THE COURT:—Gentlemen, I suppose we had better proceed and I will permit the Government to speak first.

Mr. Lewin:—The Government is content with the alternates.

Mr. Leahy:—If the court pleases, the defense will excuse Mr. Walsh.

The Assistant Clerk:—Mr. Walsh is excused.

(James M. Walsh excused.)

Thereupon—

HARRY J. JEFFRIES,

being called, took a seat near the jury box.

Mr. Lewin:—The Government is content with the alternates, your Honor.

Mr. Leahy:—The defense will excuse Mr. Jeffries.

(Harry J. Jeffries excused.)

The Assistant Clerk:—Frank E. McCrink.

Thereupon—

FRANK E. MCCRINK,

being called, took a seat near the jury box.

Mr. Lewin:—The Government is still satisfied with the alternates, your honor.

Mr. Leahy:—The defense is satisfied with the alternates.

THE COURT:—You may swear the alternates.

(Frank E. McCrink and Lloyd F. Hadaway were duly sworn as alternate jurors.)

THE COURT ADDRESSES THE DEFENDANTS

THE COURT:—Are all the indivdiual defendants here at the present time?

Mr. Leahy:—I think Dr. McGovern is still sick in bed.

THE COURT:—Now I am speaking directly to the individual defendants.

The matter of the presence of you gentlemen individually throughout the trial has been the subject of discussion between court and counsel. The court recognizes that as busy physicians, during the course of the trial you may feel it necessary to absent yourselves in order to attend on some patient, and in order that your determination of matters of that sort should not be interfered with, because you alone can judge of the necessity of your absence under such circumstances, the court has suggested that it is willing that you should absent yourself. Speak to you individually, whenever, in your judgment, your absence is deemed necessary for attendance upon some patient, but I wish to suggest that you should be here as much as circumstances will permit. But I shall put no restrictions upon you, assuming that you now, each, individually, are willing to have the case go on in your absence, looked after, of course, by your counsel.

I would like you to stand, please, if you approve of accepting that suggestion from the court.

(The defendants rose.)

Mr. Leahy:—I have this suggestion to make, if your Honor please, before counsel for the prosecution begins his opening. I am advised that there was deposited with the clerk this morning a motion. Could we approach the bench for just a moment with respect to that?

THE COURT:—Yes.

(Counsel for the respective parties approached the bench and conferred with the court.)

(Counsel resumed their places at the trial table and the trial proceeded as follows:)

THE COURT:—I may say to the alternate jurors that for the purpose of attendance upon the court and listening to the evidence and proceedings and instructions of the court, you are part of the jury, just as much so as any of the others. So that you must follow things just as the other jurors do. As we go along I will give you more specific instructions if they are necessary; but at the moment the immediate thing before us is the opening statement of counsel for the United States in which they will outline in more detail the charge in the indictment and the evidence which they expect to produce in support of it, and of course I enjoin upon all of the jurors to follow it carefully so that you will understand the case.

Mr. Lewin:—Has your Honor any objection to the presence of witnesses for the Government during the opening statement?

THE COURT:—I will leave that matter to counsel. If counsel on either side prefer that witnesses be excluded, they will be; otherwise they will be allowed to remain in court. That of course applies to the Government witnesses as well as the defense witnesses.

Mr. Lewin:—The Government has no objection to any witness being present.

THE COURT:—If you wish, you can wait until after the opening statement and we can determine that tomorrow morning.

Mr. Leahy:—We might as well ask for the rule now, because eventually the witnesses probably will be excluded.

THE COURT:—Very well. Let the witnesses be excluded.

The Assistant Clerk:—All witnesses in the case now on trial, both for the Government and for the defendants, please return to this court room tomorrow at 1:30.

Opening Statement on Behalf of the United States by John H. Lewin

Mr. Lewin:—May it please the court, Mr. Foreman, and ladies and gentlemen of the jury, my colleagues here at the front table and I are Special Assistants to the United States Attorney General, and in the Department of Justice, and we have been charged with the duty of presenting to you the Government's side of this case. The time has now come when it is appropriate to make what is known as an opening statement of the facts which the Government expects to prove, and of the nature of the evidence by which it expects to prove those facts.

In order to correctly present my presentation of the facts I propose in this opening statement to avoid speaking extemporaneously, and will adhere rather strictly to written notes. I will caution you that of course my opening statement is not evidence.

The Grand Jury in this District brought these charges, and they are embodied in an indictment consisting of over 30 printed pages. The indictment itself is nothing but an accusation; and we for the Government undertake here and now this burden, to present before you evidence, oral and written, which we believe will convince you beyond a reasonable doubt that the substantial allegations of the indictment are true.

The indictment charges that the defendants committed a misdemeanor by violating Section 3 of the Sherman Anti-Trust Act, that section of the Sherman law which applies to the District of Columbia, in that they first concertedly boycotted and restrained business of a medical cooperative known as Group Health Association, Inc.; that they concertedly restrained the business operations of twelve private Washington hospitals, and that they restrained a number of doctors, those connected with Group Health Association, and doctors who otherwise would have been connected with it or would have consulted them in the free and lawful pursuit of their own calling. It charges that these defendants entered into and participated in a conspiracy to do these things over a period of approximately two years, beginning in January 1937, running continuously through 1937 and 1938 down to the date of the indictment, which was Dec. 20, 1938.

The defendants who are so charged in the indictment and who are on trial are:

(Here he listed the defendants.)

(After naming West, Fishbein, Cutter, Leland and Woodward.)

These five defendants are doctors, but they are not generally practicing physicians. The evidence will show that they devoted their time and energies as business men largely to the policies of this organization, the A. M. A., and to the business side of medical practice.

The remaining individual defendants, fifteen in number, were all practicing physicians and surgeons here in the District of Columbia. The evidence will show that they were all members of the defendant, The Medical Society of the District of Columbia, which is a local subsidiary of the A. M. A., and that they were active in its affairs, and particularly active in its affairs during the period of the conspiracy, and in the activities of that society, which are charged in the indictment.

It will be shown by the evidence that all of these 24 defendants, the A. M. A., the District Medical Society, the two corporations, the two associations, Harris County Association and the Washington Academy of Surgeons, and the twenty individual defendants acted and conspired together during a period of approximately two years, as I have described, to effect and bring about the restraints charged, the three types of restraint that I have mentioned, and that each of those 24 defendants took active part in furthering the complete scheme.

The evidence will reveal also that they were assisted by certain other members of the District Medical Society whom the Grand Jury did not name as defendants. They will be known as and shown to be co-conspirators with these defendants here.

The evidence will also show that these defendants induced and coerced the twelve private Washington hospitals, which are not defendants here, to join with the defendants as conspirators to bring about certain of these restraints.

It may be important to outline at this time a little more fully what the evidence will show about the A. M. A., its character, and the power that it possessed as the result of its great size, its importance and its activities in the medical world to impose the restraints which are charged in this indictment.

I have stated that it is incorporated; that it has these constituent and component local societies throughout the United States; that it has a membership of 109,000 doctors out of 169,000 —all the doctors in the United States; that it publishes a weekly journal to subscribers numbering 95,000 people; that it maintains bureaus, councils and committees which concern themselves to some extent with medical economics, or the business side of the rendition of medical care. It also promulgates a set of rules which it makes binding on all of its members, including the members here in the District of Columbia who are members of the District Medical Society, and which rules embody some purely economic restraints upon the practice of medicine.

Although they are so interpreted, as the evidence will show, and so applied, these rules are given this innocent title and are called, "Principles of Medical Ethics."

Observance of these rules is enforced upon all the members in the first instance by the various local medical societies, such as the District Medical Society for its members, and the Harris County Medical Society, down in Texas, for its members.

The evidence will show that observance of these rules is largely achieved because members are unwilling to suffer loss of prestige and ostracism which would result if they should be expelled from these societies, or otherwise disciplined for violation of these restrictions that are imposed upon them.

And so the evidence will show that the A. M. A. and the other defendants possessed enormous power to boycott and thus restrain any medical cooperative or hospital or doctor whose business methods of rendering medical care differed from the business methods favored by the A. M. A. and thus offered business competition to the A. M. A. or its members.

At this point let me turn to a description of the so-called victims of this alleged conspiracy and the activities of these victims which the indictment charges the defendants restrained.

The first victim was, of course, Group Health Association, Inc., a medical cooperative.

The next victims were the doctors who claim the right to pursue their callings unhampered by the defendants and who chose to serve on the medical staff of Group Health Association.

The next victims were those doctors who would otherwise have joined the medical staff of Group Health Association, or at least would have freely consulted with it in difficult cases but who were forced by the defendants to refrain from doing so because they were members of the District Medical Society, held by its rules, and the A. M. A., and because these doctors were in fear of those two organizations.

The other victims were the twelve private independent, so called, Washington hospitals, engaged in the business of caring for patients who need hospitalization and who would have welcomed such patients even though they might be members of Group Health Association or hospitals who would have extended to the Group Health doctors the same courtesy and privileges at these hospitals in order that Group Health patients might be treated in these hospitals by doctors of their own free choice.

Group Health Association was and is, as I have said, a consumer cooperative. It was formed by a group of Federal employees for the worthy purpose of putting into effect here in the District of Columbia a reasonable plan whereby they and their families and their dependents could obtain adequate medical care, including hospitalization, for less money, and whereby the cost of service could be budgeted and paid not in one great big lump sum, which might be disastrous to them, but prepaid in the form of small monthly dues to the cooperative.

I believe that an accurate statement of the issues requires me to state now that Group Health Association was in no sense a governmental agency. It was an independent private corporation. Although it was organized by employees of the Government, it was not a branch of the Government; nor was it sponsored by the Government. It had its merits and, since nothing is perfect, it may have had its imperfections. Nevertheless, whatever shortcomings it had, it was entitled to the protection of the law; and it is not sponsored by the Government in this case, except that the Government considers itself under the same duty to prosecute any persons, whoever they may be, who commit unlawful restraints as the Government is when such restraints are imposed upon any other business activity.

The plan of the Group Health Association was a simple one. It was borrowed from similar plans in other parts of the United States which had worked reasonably and successfully. The Government employees who initiated the plan were those employed by the Home Owners Loan Corporation, the H. O. L. C. It was later extended to certain of the other executive departments and bureaus of the Government.

The plan was first explained to their own credit union, which they operate themselves, where they deposited their money and borrowed in the H. O. L. C., by their personnel director, Mr. Raymond R. Zimmerman, who will be called to testify in this case. It will appear that the officers of the credit union thought well of the plan, because they took notice of the large amounts of money which the employees were borrowing from that credit union in order to meet medical bills; and the officials of the H. O. L. C. to whom these employees naturaly submitted their plan before they put it into operation, also indicated, as the evidence will show, that they thought well of it, and they decided to encourage it, because they believed that as a business proposition for the H. O. L. C. more and better medical service available to their employees, preventive service and physical examinations and that sort of thing, as well as curative, might increase the efficiency of their employees and might reduce the loss to the Corporation from sickness.

Through the fall of 1936 and the early part of 1937 these plans were discussed and studied, and in January, 1937, at a mass meeting of all these employees, the employees voted almost unanimously to attempt to put the plan into operation.

A large number indicated their willingness to become members, and a consumer cooperative to operate the plan was duly incorporated under the Federal law, a private corporation, and given the name Group Health Association, Inc., and it was incorporated on February 24, two days after Washington's Birthday, 1937. It was purely a non-profit organization.

It undertook to collect from its members monthly dues. First, the dues were $2.20 for an individual member, and $3.30 for a family membership. Later it became necessary to revise those dues upward slightly. The individual membership remained at $2.20; it never was changed; but the family membership was raised to $4, and there were some additional small charges for dependents.

Out of this money so collected the Group Health Association undertook not to make any profit, but to defray the expenses of operating a modern, up-to-date clinic, centrally located where its members could get the benefit of the plan, to pay the salaries of a medical staff of doctors and the cost of 21 days of hospitalization in a hospital, where hospitalization would be needed.

Thus, with a few minor exceptions, which I will not note now, Group Health Association undertook in this way, cooperatively, to give complete medical care and to encourage its members to have regular physical examinations and other preventive treatments without any extra charge.

It proposed to employ a medical director, a licensed physician, and to leave to him, to his better judgment, the selection of the rest of the medical staff, and to leave to this medical staff complete freedom in all matters pertaining to the treatment of patients, unhampered and free from all interference in such matters by the laymen in the organization who were elected members for the purpose of conducting, without compensation to themselves, the purely business affairs of the cooperative.

It was contemplated that after the clinic was procured and equipped and was under way the dues collected would make the plan self-sustaining financially, but it was also realized that there must be some initial lump sum expenditures to procure the clinic and to procure the modern, up-to-date equipment that was to go into that clinic. Otherwise the establishment of the clinic would have to be deferred until these small monthly dues could accumulate in sufficient quantities.

I have said that the evidence would show that the officials of the H. O. L. C. manifested interest in this plan. They had made a study from monthly reports furnished the H. O. L. C.'s officers which showed that the H. O. L. C. was under the expense of $100,000 a year for sick leave alone simply for its employees here in Washington—$100,000 a year.

It will appear that these officials of the H. O. L. C. had acquainted themselves with the medical plans which many private businesses and industrial concerns had encouraged in the interest of efficiency of their employees.

The H. O. L. C. was a corporation created by an Act of Congress in 1933 to engage in the commercial business of lending money for the financing of homes and farm mortgages on homes. It paid its own way out of money which it earned in that business.

The statute, Federal statute under which it was incorporated, authorized it to determine its own expenditures, its own necessary expenditures, and the manner in which they were to be allowed and paid, without the provision of any other law governing the expenditure of any other fund. Accordingly, and under the statute, and the powers granted to the corporation thereunder, the officials of the Home Owners' Loan entered into a contract with that association in March 1937, whereby, on the one hand the H. O. L. C. agreed to make available absolutely to Group Health Association the comparatively small sum of $40,000 and whereby in return for that Group Health Association undertook in this contract to maintain this medical service for the employees of H. O. L. C. and, in addition, to conduct physical examinations for the said employees of the H. O. L. C. and in addition to that to supervise nursing services provided.

Now, after the Home Owners' Loan became obligated to advance this $40,000, which it agreed to advance part in cash and part in medical and surgical equipment which Group Health Association needed,—and I may say here that under the law the Home Owners' Loan was permitted in making purchases to get this at somewhat reduced prices through the Procurement Division of the Treasury,—I say after this money, this $40,000 was advanced, this clinic was put into operation on Nov. 1, 1937. In other words it was incorporated in February; the contract was made in March; and the clinic opened in November 1937.

In May 1937 the trustees of Group Health Insurance Association, after making a previous attempt so to do, which the evidence will show was blocked and hampered by these defendants in order to prevent the association from acquiring a staff, engaged Henry Rolf Brown, a physician just about to retire from the medical staff of the Veterans Administration, engaged him to be the first medical director, and during the summer of 1937 he and Dr. Raymond E. Selders, a surgeon whom Dr. Brown had engaged for general surgery, occupied themselves in acquiring the necessary equipment. Dr. Brown selected at first three more licensed physicians and they were elected, after appointment, to work under the guidance and direction of Dr. Brown.

The evidence will show that this whole plan was sound and reasonable; that its details were widely conceived, and that under the circumstances, bearing in mind the vigorous opposition it encountered from the defendant these plans were, on the whole, well carried out. The business of Group Health Association was not itself to engage in the practice of medicine but was on the other hand to make the business arrangement for the provision of medical care and hospitalization to its members and their dependents on what is called a risk sharing prepayment basis. The risk sharing plan has some insurance features present in it in that you pay a limited amount or fee for which there is received this medical care where and while others may not have occasion to need or require that care although paying a similar amount.

Group Health Association paid its employees and medical staff ample salaries. It provided, where it was permitted to do so, hospitalization for its members and their dependents. The evidence will demonstrate the type of work and services performed by the general practitioners and specialists for the association. They had this advantage: They obtained by joining the medical staff and engaging in group practice under the direction of this medical officer the opportunity of familiarizing themselves with each other's experience and skill, and by making common use of the equipment, such as x-rays, they were able to and did avoid much unnecessary expense. The evidence will further show that the personal relationship, so important in the premises and which must exist between doctors and their patients, did continue to exist between the members of the association and the doctors on the staff engaged in treating and prescribing for them. The evidence will show that the lay officers, trustees, confined themselves to the business problems of the Co-operative and did not engage in any interference with the doctors in their rendition of medical services to the members.

Yes, the evidence will show that the Group Health Association was a worth while and needed experiment in the field of economics; in providing more efficient medical care at less cost, and in the manner in which the bill was to be paid. In short, in providing an easier burden to the patient in getting the medical job done efficiently. It was, as the evidence will show, an experiment which richly deserved, not the opposition which it got, but cooperation and assistance from so-called organized medicine, including these defendants.

There will be evidence of the need for providing medicine under such a plan, that is, at lower cost and with an easier way of paying for it, and it will be shown that this need was felt primarily by those in the lower income group, people who must be provided for on incomes of three or four thousand dollars, or less. It will appear that such people did not want charity but on the other hand were such that if called on to pay at any time without warning the substantial amount necessary for medical care and hospitalization it might constitute for them a family catastrophe.

There will be evidence that these people could get as members of this group medical services they could afford to pay for at a price they could afford to pay, and the means of budgeting such expenses. The evidence will show that Group Health Association was designed primarily to meet such economic problems of just such people of such income status. And the evidence will also show that even the defendants themselves had recognized this need. That although they fully recognized it, it was after Group Health Association had embarked upon the solution of the problem, and only then, that the fear of competition from Group Health forced the defendants to attempt some similar enterprise of their own.

It is a fact that the qualifications for membership in Group Health Association were not confined to people of the low income group. The testimony will be that it was not thought wise for them to make any class distinction on that or any other basis, but it will also appear as a fact that over 83 per cent of those who joined by Nov. 1, 1937, and who had thus become interested in this organization were people of that low income

group; and it is also a fact that if Group Health Association had been destroyed, as the defendants tried to destroy it, such people would have suffered the most.

And now before I come to tell you of the hostile, unfair and oppressive treatment to be disclosed by the evidence which the defendants gave and meted out to this cooperative for nearly two years, let me outline briefly the nature of the evidence of the reasonableness and cooperative attitude which, on the other hand, Group Health Association and its officers and officials displayed toward the defendants, and particularly the District Medical Society. From the outset the sponsors of Group Health Association sought help and not antagonism from the local medical society. For instance, in the prospectus which first outlined the plan, and which was followed by one more in detail, both of which came to the attention of the medical society, there appeared this statement:

"It will, of course, be desirable to obtain the fullest possible measure of cooperation from the members of the medical profession of the District of Columbia. After the plan is launched the Medical Society of the District of Columbia will be invited to appoint a representative to sit with the committee which undertakes to establish the plan. It will also be requested to assign a committee of several physicians to advise the medical director of the plan of all relevant matters. The intention will be to solicit the advice and cooperation of the local medical society and to work with it to the fullest degree possible."

We will show that that expression of good will and willingness to seek its cooperation came specifically to the attention of the District Medical Society. Furthermore, it will appear from the evidence that as early as June 24, 1937, some of the officers and trustees, and the medical director, Dr. Brown, with the utmost good will, voluntarily attended a meeting of the executive committee of the District Medical Society at their suggestion and explained to that committee in detail the Group Health Association project; and at that meeting the Medical Director said frankly to them, "We will be glad to have our staff make application for membership in your society and cooperate with your society in every way we can for the uplifting of medicine. If you can help us select personnel we will be glad to take those recommendations, consider them and adopt them where possible." There will be evidence also that on three occasions this little Group Association, trying to get started, sought the cooperation of the society; that they approached the Society through its president, Dr. Neill, on several occasions and even offered him the surgeonship of the Group Health Association. The evidence will show that although Group Health Association would have preferred the active cooperation of the medical group in making this project a success, Group Health would have been happy, if that had been impossible, simply for the District Medical Society to let it alone. We will show that on this point one of Group Health Association's trustees asked the District Medical Society this reasonable question: whether it would be agreeable to the Committee of the District Medical Society, and the other associations, to let this program get started—this program as equally serious with us as their own was with them—in rendering an ethical service to patients; if they could not properly defer any action or decision with reference to us until we have lived a little while, and they had an opportunity to judge us and what we had done, not from the standpoint of what the other group has done, but from the standpoint of how we operate here. We asked them to simply delay any expression of opinion for the time being, we being free all the time to consult them; they being free all the time to consult us, working together cooperatively, each recognizing the other's ability and honesty, working it out on a plan satisfactory to this group here. Such an enterprise as I have described, the proof will show here, Group Health Association was; no more, no less. But the Government's evidence will also establish that in order for Group Health Association to succeed, in order to arrange for the best possible service to its members, at least three things were important and absolutely necessary. First, it must be free and unhampered in seeking to obtain qualified doctors for its medical staff and in retaining that staff after they joined. The right to be free and unhampered, the chance to be that. That is first. In the second place these doctors on its medical staff, specialists and general medical men, if there were any serious and difficult cases that arose in any doctor's practice, they must be free and unhampered in seeking consultations from specialists. Not the right to thrust themselves on an individual consultant, but the right to be free and unhampered in seeking such consultation.

Last of all, Group Health Association must be free and unhampered in seeking to obtain from the private hospitals in Washington, hospital accommodations for its members and access to those hospitals for its doctors, so that these doctors could operate on and treat the Group members when they were hospitalized. In acquiring and holding a medical staff, in obtaining consultations with outside specialists, and in obtaining access to private Washington hospitals, Group Health Association did not require or seek any preferential treatment, but merely equality with the others.

And our evidence will show that the defendants realized that if they could exert their power in combination to shut Group Health off from acquiring these very reasonable necessities they might succeed in suppressing the competition, and might succeed in destroying Group Health altogether. And there will be evidence of other restraint. But we are prepared to show that the principal means adopted by the defendants to carry out their conspiracy to crush and destroy this competitor were:

1. To prevent any of the 800 or more doctors of the District Medical Society in Washington from accepting employment from Group Health Association, even if they wanted to do so, or from even consulting with any other Group Health Association doctors whoever they may be.

2. To obstruct Group Health in its efforts to obtain doctors for its staff from members of the profession, who were not even members of the District Medical Society.

3. To attack doctors who joined Group Health Association staff in order to induce them to resign, quit and abandon Group Health Association or, failing that, to punish them and discredit them in their profession in the hospitals.

4. To induce all, every one of the local private hospitals which were supposed to be independent enterprises, to join in this boycott of Group Health Association by refusing to admit Group doctors to hospital privileges in their institutions.

And you will be asked to contrast these drastic measures of opposition which the doctors carried out against Group Health Association, and its doctors—it is almost unbelievable but the evidence will establish it—with the totally different attitude manifested by Group Health Association seeking from the defendants merely their cooperation and good will. I shall outline the Government's evidence as to each of these four means adopted by the defendants.

First, I said was the boycott of the staff, preventing them from getting a staff, taking a staff, preventing them from getting consultants in different cases. As to the first of these, the staff and consultation boycott, the evidence will show that on March 3, 1937, just two weeks after Group Health Association was organized, the defendant District Medical Association amended its constitution so as to forbid all its members from having anything whatsoever to do with any clinic or with any doctors who were, for any reason, denied the approval of the District Medical Society. While it is true that this amendment was directed ostensibly against another clinic, a workman's compensation clinic known as the Crawford Clinic, it is true nevertheless that this amendment adopted in March, 1937, for the first time, two weeks after Group Health Association was formed, was shortly afterward invoked against Group Health. The amendment provides: That no member of the Society—and there were at least 825 of them—shall engage in any professional capacity whatsoever with any organization, group or individual, by any name called or however organized, engaged in the practice of medicine in the District of Columbia or within ten miles thereof, which has not been approved by the Society.

The Executive Committee is authorized and directed to prepare an approved list of organizations, groups and individuals by whatever name called or however organized, engaged in the practice of medicine in the District of Columbia, or within 10 miles thereof, and the same shall be kept in the office of the Secretary-Treasurer.

Now, in the debate leading up to the adoption of that amendment some of the members of the District Medical Society argued against it. They are not defendants here. One of them warned the others that if they passed it it gave the District of Columbia Medical Society the power to impose boycott on perfectly legitimate, legal clinics, and expressed the view that it was not an altogether wise thing to do to attempt to boycott that which is legal, a legal business, in this fashion. Notwithstanding that warning, the amendment was adopted and, once having deprived all its 825 members of their freedom by the imposition of this rule, the defendant, the District Medical Society, was in a position to prevent over 800 doctors practicing in Washington from either joining Group Health Assocation if they wanted to, or from consulting with any of its doctors, by the simple expedient of simply failing to put Group Health Association on that list. In June and July, or in June or July, 1937, the Executive Committee of the District Medical Society held its first series of meetings for the avowed purpose of discussing ways and means of combating Group Health Association. This appears in their minutes. At a meeting on July

12, it prepared and filed, pursuant to the amendment which I have just called to your attention, a list of all physicians and institutions furnishing medical care which it would approve. It was pointed out that the failure to put Group Health Association on this list would automatically forbid consultation by members of the association with members of the society. Accordingly, the defendants intentionally omitted from this private list the name of Group Health Association and any doctors whom it might have on its staff; thus the list became what is generally known as a "white list" and the effect was to blacklist all those who did not belong thereon.

The next step was to bring that home to all the members of the Society; those who attended the meeting and those who didn't, and on July 29, 1937, the defendant Dr. Conklin, the Secretary of District Medical Society, sent a letter to each of the members enclosing this white list and calling attention to the fact that the constitution of the District of Columbia forbade the members from having anything whatever to do with organizations and doctors not listed thereon. On the same day he sent another letter to all these doctors, directing their attention specifically to this provision of the constitution in his other letter, and specifically referred to an organization, referring to it as "an organization interested in gaining medical personnel." These letters constituted a direct threat that members of the District of Columbia Medical Society would be disciplined if they did accept employment with Group Health or consult with any of its doctors, and in August 1937, a man who until June 12, 1937, had been the chairman of the board of the Society wrote to the defendant, Dr. Hooe, telling members of the Society that they must be warned not to take position with Group Health.

The evidence will leave no doubt that this boycott was intentionally imposed. We shall offer the minutes of the various meetings held during the summer of 1937, and these minutes will reveal to you in great detail the plan which the defendants made for the imposition of this particular restraint. The local doctors here in Washington were assisted in this plot—they were large enough to do it themselves, but were assisted by the Chicago representatives of the powerful A. M. A.—I say they were assisted by the representatives of the A. M. A. who were specifically authorized to come down here to Washington to be on the ground, to participate and cooperate with the local defendants. The chairman of one of the subcommittees of the District Medical Society was advised by William Woodward, a full-time employee of the A. M. A., who is head of this Legal Medicine and Legislation Committee, "that the District Medical Society cannot go on with Group Health Association without violating what the A. M. A. considers principles of medical ethics."

Special committees were appointed to make recommendations for combating the Group Health Association, using that very word. One of the co-conspirators at an early meeting pointed out that one of the ways of attaining their objective was to discipline, and I am using his words, "Our own members." And he suggested that one of the weapons at hand—not reasonable persuasion but weapons at hand available was to forbid consultation with physicians doing this type of work. What type of work? The type of work I have described.

One of the committees, in a report to the executive committee, recommended four things that might be done to groups which were considered unethical. Another subcommittee, 1937, reported that Group Health Association is unethical, and the participation in it by any member of the Medical Society of the District of Columbia would render it amenable to disciplinary action by the Society.

There was the evidence that throughout the period of the conspiracy the defendants were vigilant in seeing that the members of the Society did not transgress. For example, in March 1938, two members of the group became seriously ill with heart trouble, and the group health doctor, who was attending them, felt the need, as any responsible physician would, of consultations with men who were heart specialists here in the City of Washington. He wanted to call such a specialist in consultation. This heart specialist was willing to consult, wanted to do so, but he was not permitted by the defendants to enter into the usual consultation at the bedside of the defendant. Oh, no, he was specifically instructed by Dr. Neill, the President of the Society, to examine these patients only in the absence of the Group Health Association doctor; not to enter into any consultation with any of the doctors employed by Group Health—and there will be documentary evidence of that.

The evidence will show that another prominent Washington physician, also a member of the District Medical Society, but with some independence of mind, happened to be a personal friend of Dr. Brown, and because that doctor was observed having luncheon with Dr. Brown and conversing with him, and because that doctor accepted as his own private patient—he had a mask on—one of the members of Group Health Association and participated in a serious and dangerous operation of such patient that doctor was proceeded against by this disciplinary committee of the District of Columbia. That committee, acting under the chairmanship of the defendant, Dr. Hooe, actually recommended that the doctor be subjected to discipline. Shortly after Group Health opened its clinic in November 1937, a young lady employed as a laboratory technician fell suddenly and dangerously ill of an acute internal hemorrhage requiring an immediate operation. Since no surgeon connected with Group Health had hospital privileges the doctor who diagnosed her case, and who had found her on the floor, rushed her to Garfield Hospital and employed a doctor, a member of the District Medical Society, to perform the operation. That doctor permitted the patient to remain a long time without attention, with her life in serious danger, while he haggled with the Group Health doctor as to whether he would be permitted by the Society to take the case, and agreed to perform the operation only after he was assured by the Group Health Association that he was entering the patient as his own private patient and not as a member of Group Health. After he got those assurances and not before, and all this time the patient in need of operative treatment, the operation was performed.

Mr. Leahy:—Without intending to interrupt you, are you referring to the Tew case?

Mr. Lewin:—No, I am not. I have no objection to giving the name. It is Mary Frances Stuart. I will mention the Tew case; I will get around to that.

Mr. Leahy:—I thought you would.

Mr. Lewin:—Moreover the evidence will show that the defendants were not content to deprive their own members of the right to treat members of the Association; their campaign was so venomous and so widespread that they succeeded in deterring other doctors from doing anything through fear of the defendants' displeasure and reprisals. At the outset Group Health Association sought to obtain as its first Medical Director a certain doctor who had just had a fine career in the Medical Corps of the United States Army. This gentleman approved heartily of the objectives of Group Health Association, and of its members. He approved the group practice and the advantages gotten from it, and he approved the prepayment scheme so people could get more for less money. He personally wished—he was free, willing, and twenty-one—he personally wished to accept the appointment but the opposition of the District Medical Society however was brought to bear upon him and he became convinced that he should not do it and went back to them after telling them that he would take the position, stating that disapproval by the District Medical Society would prevent Group Health Association from obtaining any available medical assistance. Thus, and this is important—for it will be borne out by the evidence, any adverse pressure which could or might be leveled at the medical staff of Group Health Association was directly attributable to the acts of the defendants themselves.

Now, let me take up the attack. This story gets worse and worse, the attacks which the defendant made upon Group Health doctors in order to induce them to resign from Group Health Association or, failing that, to punish them or discredit them in their profession with the hospital. On Nov. 1, 1937, Group Health Association announced a staff of five doctors. There was Dr. Brown, and four doctors he had just chosen to work with him. There was Dr. Selders, the surgeon, the doctor in charge of internal medicine, and—

The Court (interposing):—At any convenient time, Mr. Lewin, we will suspend and adjourn until tomorrow.

Mr. Lewin:—Well, I was just getting started on another point; this might be as good as any time to adjourn.

The Court:—Members of the jury, including the alternate juror. There are some observations which I want to make before we adjourn. It sometimes occurs in a protracted trial such as this undoubtedly will be, one which is likely to attract considerable public attention, that jurors who are selected to try that case are by order of court kept together and confined during the entire course of the trial. The purposes of that may be obvious to you. Among others, it is to relieve the jury itself of any embarrassment and unfettered and impartial attitude toward the case. Also, to relieve other parties and persons who in one way or another connected with the case might be embarrassed as a result of contact with such juror; also to avoid, as far as possible, any incidents arising which by their nature might be improper and thus break down all efforts that have been made by all the parties on both sides, all the expense to the Government and the parties, and all those contributions and participations in the trial to go for naught.

Now, I have the power to confine you in this case. It is one which should only be exercised by the Court when necessary, and depends entirely upon the circumstances, finally to be determined in the Court's discretion. I have decided not to confine you. I have great confidence that you will as jurors appreciate

the responsible duties which have been cast upon you, and that by your demeanor throughout this case you will remove any possibility, so far as it is within your power, of any incidents arising which could in any way embarrass you as jurors or prejudice the trial of this case. Some of you, I dare say, have been jurors before, and have a thorough understanding not only of the responsibilities of a juror, but I think also of the high honor and dignity of the office. I want to say to you very sincerely that in my own experience as a lawyer and as a Judge, much of it spent in courtrooms with juries, I regard the jury and each member thereof as occupying a position of honor, dignity and responsibility equal to that of the Judge himself. You are an integral part of this institution, set up by the sovereign power of the land to administer justice. You, in the trial of the case, are the supreme judges of the facts. You look to a Judge upon the bench to rule fairly and impartially. You expect him to keep his mind free of any sympathy, prejudice or influence which would in any wise affect the conscientious, fearless and fair determination of the matter upon which he is called upon to rule. A like responsibility rests upon you, and I want you to appreciate, and I want you every moment throughout the trial of this case to understand that these questions which were put to you and which you have answered resulted in your selection as jurors because on your solemn oaths you declared yourself in mind and heart thoroughly impartial and unfettered to undertake the trial of this case without any preconceived notion that would embarrass you or prejudice you in any wise. That means as you sit there now on the threshold of this case that you have assumed the same attitude of impartiality as you expect from a Judge, and I have confidence that you will maintain that attitude throughout the course of the case. It requires no particular quality of the mind or the spirit to assume and maintain a fair and impartial attitude. It requires only a conscientious determination to do so, and there is no reason, though you may lack the training which Judges may have, there is no reason why you cannot conduct yourself throughout this trial conscientiously with an impartial and fearless attitude. To do so be careful in your conduct. Be on your guard at all times so that at some loose moment you may not unwittingly embarrass yourself or the trial of this case. Be ever mindful of your responsibility and of the very high dignity and honor of your position. Especially avoid positions and situations arising as you go about and in and out of the courtroom which might invite a discussion of the case or which might throw you into a body where it is being discussed. Carefully avoid any discussion by yourself, even to members of your own family. You must determine the case upon your own judgment, so do not allow any suggestion from anybody else to creep into your mind, the result of which might be to prevent you from acting fairly and impartially.

Avoid reading of the case; doubtless there will be articles in the public press from day to day. Those articles are written by gentlemen who undoubtedly desire to make fair presentation of what occurs in Court, but they are written rapidly and sometimes without a just appreciation of the significance of the things which they purport to report, and so for one reason or another it may not be presented in the way in which it has actually occurred, or under the same condition as it occurred here and therefore may create a different impression. Now, you are here. You see and you hear this evidence. There is no reason for you to read about it any more than there is for me to do so. I don't have to. Neither do you, so I enjoin upon you very strictly not to read any printed matter of what purports to concern this case.

If at any time anyone approaches you in order to speak to you about this case, or if anyone does attempt to speak to you or influence you concerning this case, it will be your duty to report it to the Court at your first opportunity so the Court may take appropriate note and action.

And those things, I think, ladies and gentlemen, if you will bear them in mind continuously and without the Court constantly reminding you of them, I think will guide you along throughout the period of this trial in a way which will leave you at the end of it in the same fair and impartial state of mind as you are today.

Now, I am putting my confidence and my trust in you and I want you by your conduct and demeanor about this Court and away from the Court at all times to appreciate what it has meant to you for the Court to repose that trust and confidence in you. It has relieved you of what would have amounted to a virtual imprisonment for a long and indefinite period. Bear that in mind and that is because of the solemn oath you have taken which I am sure you understand and appreciate—because I am sure you realize your honor and dignity as jurors—it is because I am confident of your intentions and ability to maintain the honor and integrity of yourselves as jurors that I wish now to permit you to go to your homes without any further admonition, but with the hope and confidence and trust which I have expressed and which I hope will be respected.

Now, as I indicated at the noon recess, the jurors will always be permitted to leave the courtroom first. When you leave I want you to disperse right away; get away from the courthouse at once, do not linger around. I will expect you here at ten minutes to ten each morning, unless I indicate an earlier time. You will be here and come into this room and assemble there and be ready to answer the roll call in your seats before I formally open Court, as the Clerk calls your name. Be here promptly at ten minutes to ten. You will now be excused.

(Whereupon, at 4:15 p. m., an adjournment was taken until tomorrow, Thursday, Feb. 6, 1941, at 10 o'clock a. m.).

FEBRUARY 6, 1941

MORNING SESSION

Mr. Baker:—Dr. Christie is much worried; he has come down with an attack of gallbladder trouble and is at this time unable to be present.

THE COURT:—That is all right. We can take that matter up during a recess, if necessary.

After summarizing his statement of the afternoon Mr. Lewin proceeded:

Mr. Lewin:—I told you that the defendants, as a powerful group, determined to destroy Group Health Association because they realized it was a business competitor of theirs, and they determined to destroy it by boycott; and then I told you of the principal means they adopted to shut them off from gaining a medical staff from any members of these large societies, and shut them off from getting a medical staff from even outside these societies by intimidating such members.

Now, let us take up the third of these means. The first was the staff boycott; the second the consultation boycott. The third means were attacks by the defendants on Group Health Association doctors, in order to induce them to resign from Group Health Association, or if they did not do so, to discredit them.

GROUP HEALTH ASSOCIATION

The Group Health Association had been incorporated in February, 1937, you will remember. Throughout the summer it had been trying to get its business together, and then its initial staff of five doctors, the medical director—the old gentleman whom the Association had just appointed, and who had just left the Veterans Bureau—Dr. Selders, a surgeon; Dr. Hulburt; Dr. Allan Lee, interns, general practitioners; Dr. Scandiffio, who was a pediatrician, was the child specialist here in Washington; and a little later, a young doctor, Dr. Richardson, to make house calls upon the members who could not come to the clinic.

Dr. Selders was a man 45 years of age. He was a surgeon. He had practiced privately in Texas. You will begin to observe why the Harris County Medical Society comes into this case as a defendant. He was a member of the Harris County Medical Society in good standing, and therefore a member of this very American Medical Association, this Chicago corporation, which is a defendant here.

Dr. R. Stephen Hulburt had been engaged in the District of Columbia for a number of years in the practice of medicine; so had Dr. Allan Lee and Dr. Francis Richardson. They both came from private practice in Washington. Dr. Scandiffio had been a child specialist here in Washington for a number of years.

Now if there was anything wrong with this staff, as I said yesterday, the fault is directly attributable to these defendants who were engaged all that time, all through that summer, in combating Group Health, and in an effort to prevent it from getting doctors. Up to this time they had been actively engaged in using their efforts—to use their own words—in combating it, although they didn't even know the names of all of these doctors. The evidence will show they had been anxiously awaiting the announcement of the doctors' appointments. The conspiracy had been in operation for many months and plans had been made to apply these boycotts against such doctors as would be appointed by Group Health Association, whoever they might be. On the day of the announcement, the A. M. A. agent stationed here in Washington telegraphed their names to the headquarters of the A. M. A. in Chicago, and immediately the defendant West wrote from Chicago—he is the general manager of the A. M. A.—he wrote to inform the District Medical Society here of their names, and pointed out that Drs. Lee and Scandiffio were members of the District Medical Society and of the A. M. A. in good standing. So we had three members of the A. M. A. on that list, and he pointed out

they were in good standing. Three days later one of the prominent members of the District Medical Society engaged in this conspiracy wrote the defendant Woodward, the chief of the A. M. A.'s bureau of legislation, and this letter was passed on to the defendant West. In that letter the writer expressed the fear, his fear, that "this group"—the doctors who had identified themselves with Group Health Association "will probably become medical outcasts so far as we are locally concerned." You will see from the evidence how completely this prediction and intention was borne out. The evidence will disclose that attacks were made on each of the Group Health Association doctors, as I have named them, with the exception of this Dr. Brown. The attacks succeeded in the cases of three of these doctors: Dr. Lee, Dr. Hulburt and Dr. Richardson, internist, who were induced by pressure exerted by the District Medical Society to abandon Group Health, and Group Health Association thereby lost their services completely. But the evidence will also show that the objective failed in the cases of Drs. Scandiffio and Selders. These two doctors refused to be intimidated; they stuck to their guns and, as a result, disciplinary action was brought against Dr. Scandiffio here, and against Dr. Selders away down at the end of this long arm of the defendant corporation, the A. M. A., in Texas, in an effort to punish them. Now, as I said, two of them were members of the local staff, that is, two members of the staff were members of the District of Columbia Medical Society in good standing, namely, Drs. Lee and Scandiffio. The announcement of the appointment to the staff came on the first of November. On November 2nd, one day after that, one day after they joined Group Health Association, they were cited by Dr. Hooe to appear before his disciplinary committee, the disciplinary committee of the District of Columbia Medical Society, and were so cited solely because they had accepted positions with Group Health Association; and by that committee they were made the subjects of charges. Although they had as members reported the terms of their contract with Group Health Association and had done so as soon as the terms of their contract was reduced to writing, they were nevertheless charged with:

1. Having associated themselves professionally with a group of physicians who had not received the approval of the Society; and

2. They had not reported to the Society the oral understanding that they had made in November, or thereabouts, before the contract was reduced to writing.

As I said, this disciplinary committee was headed by Dr. Hooe, and he recommended that solely on these grounds these doctors be expelled absolutely from the Society. The two doctors were tried before the members of the Executive Committee of the Society, who purported to act as judges. The presiding judge at this trial was E. Hiram Reede; the associate judges included Drs. Neill and Sprigg, chairman of the Executive Committee, and Dr. McGovern, chairman of the subcommittee, which had already, during the summertime, recommended these boycotts against Group Health Association. He was one of the judges, and Dr. Conklin, the secretary who had written these letters enclosing the white list, on which the name of Group Health Association did not appear, likewise participated in the trial. Last, but not least, the defendant Hooe himself acted as a judge, although he was chairman of the committee that actually brought the charges.

ACTION OF DISCIPLINARY COMMITTEE

We will offer in evidence the stenographic transcript of those proceedings, and it will be disclosed incidentally that they conducted there a hearing, a so-called trial, which was unfair from first to last, and a perfect travesty on justice. The main purpose of the trial, as I have said, was to frighten these two doctors and thus coerce them into abandoning Group Health Association. The evidence will show those tactics succeeded in the cases of Dr. Allen Lee and Dr. Francis Richardson, both young men. After one session the latter had enough, and he was induced to recant and to abandon Group Health. Now, was he still punished for what he had done? Oh, no. Immediately thereafter the charges were dropped against Lee and he was taken back into the fold of the District Medical Society where, as far as I know, he still remains. But those threatening tactics did not succeed in the case of Dr. Scandiffio. He was young too, but he stuck to his guns. As a result however he paid a heavy price of complete expulsion from this enormous medical society here in the District and from the A. M. A. Dr. Hulburt, another of these doctors, did not escape. He was not even a member of the District Medical Society. Nevertheless, he was not immune from their attacks. Representatives of the District Medical Society exerted every effort to cause him to resign, until, in November 1938, he quit the Association. After he left Group Health Association under that pressure, he was rewarded with hospital privileges, admitted to the courtesy staff privileges at Columbia Hospital, a privilege he had been trying in vain to secure, but which within a month after he quit Group Health he was accorded, and given access to that staff.

Little Dr. Richardson: he joined the Group Health staff to make these house calls. He enjoyed and had enjoyed the hospital privileges at Sibley Memorial Hospital, one of these twelve Washington hospitals; and in June 1938 he was approached by two members of the District of Columbia Medical Society and told that if he continued to serve on Group Health staff he would lose those hospitals privileges. It was too much for him. The very next day he resigned from Group Health Association.

Now, Dr. Selders—just another incident. He was a member of the A. M. A., because of his membership in the Harris County Medical Society. He was in good standing down there in Texas. He had been a member for years. Two days before Group Health Association opened its clinic the long arm of organized medicine reached out. The defendant Conklin, again acting as secretary for this local medical society, wrote to the secretary of the Texas State Society informing him of Dr. Selders' employment, and the secretary of that society wrote back, requesting additional information so that charges of unethical conduct could be lodged against Dr. Selders. As a result of some further correspondence this Harris County Medical Society actually brought proceedings to expel him from the A. M. A. They never did expel him, but the evidence will show that the proceedings were instituted against him. And you are going to have access to the original records. The only charge against him was that he had associated himself with Group Health Association. For thus aiding and abetting these local defendants, and this powerful A. M. A., the Harris County Association, not the members individually, but the association, became a part of this conspiracy and was named as a defendant by the grand jury.

. . . . . .

I now come to another serious means employed, the effort exerted to coerce and induce the independent hospitals to join in this conspiracy and themselves close their doors to Group Health Association doctors.

It is charged that the defendants conspired and coerced, or conspired to coerce these hospitals to boycott Group Health Association doctors from practicing medicine. Then, the defendants are charged with placing unlawful restraint on hospitals in the conduct of their own hospital businesses, and with employing these restraints on the hospitals as a further means for restraining and destroying the defendants' competitor, Group Health Association.

HOSPITALIZATION

Among the services that Group Health offered its members in return for the dues which they paid were twenty-one days hospitalization where needed, and without any additional expense; and surgical and medical treatment by Group Health Association doctors while they were in the hospital. Now they could have their own doctors if they wanted to; this is what they were entitled to. We will show that it was essential to the success of Group Health that it be free and unhampered in gaining access to these courtesy staffs of doctors practicing at these hospitals. I want to make absolutely clear to you that it is not the contention of the Government that Group Health Association, or any other clinic, has the unqualified right to thrust itself on any hospital it chooses and demand access thereto from any hospital, which acts independently and of its own free will in its desire to exclude such person or doctor. The evidence will show that Group Health and its doctors did not claim this right. They expected only equal opportunity in procuring these privileges. They merely took the position, and it is the position of the Government, that they had the same right as any other person, and that Group Health doctors had the same right as any other doctors, unrestrained and unhampered by any combination of these powerful defendants when they came to deal with each independent hospital; and further that these hospitals had the exclusive right to decide for themselves independently and separately, and uncoerced and unhampered by any pressure, what clinic or clinics they would recognize and what doctors they thought were of sufficient standing to admit to their hospital.

Now there are 12, and only 12 private hospitals here in Washington; there are some smaller ones. However, there were available to Group Health Association only the 12 which I will now refer to. Eleven of these are located within the city limits of Washington, and I will give their abbreviated names, to make it easier. They were Casualty, Children's, Columbia, Emergency, Episcopal, Garfield, Georgetown, George Washington, Homeopathic, Providence, and Sibley; and another hospital

which was also available, located out in Takoma Park, and known as the Washington Sanitarium. These 12 hospitals will be referred to in this case as the 12 Washington hospitals, without naming them. Each of these 12 hospitals is owned, not by the defendants but by independent corporations, and the control of the business affairs of each of these hospitals is entrusted by their corporate charters, not to the defendants but to a lay board of trustees, somewhat similar to the governing board of Group Health Association. Each of these hospitals has two kinds of medical staff. The first is known as the regular or attending staff; it manages the medical affairs of the hospital, as it should do. The second has no voice in the hospital affairs. It is known as the courtesy staff, and it is composed of doctors not on the regular staff, but who are permitted to treat their patients in that particular hospital. Except in emergency cases only those doctors who are members of the regular or attending staff, or who have been elected to the courtesy staff, are permitted to treat their patients there. If a terrible emergency arises they break down that rule. Group Health Association doctors did not even ask to be put on the regular or attending staff of that hospital; they did not ask for any voice in the medical management of the hospital, but the evidence will show that they did ask to be admitted to the courtesy staff. And the evidence will show that due to the defendants' conspiracy, and while it continued, all these hospitals failed to grant these applications, not to just one doctor of Group Health but to all doctors of Group Health; and such doctors of Group Health were excluded therefrom. And except in emergencies, the members of Group Health Association when admitted to these hospitals were denied treatment of their own free choice; that is, by the doctors of Group Health Association whom they wanted to treat them.

We will show you from the minutes of the District Medical Society how the defendants combined to exert this pressure on each one of these hospitals to cause them to exclude Group Health doctors. And we will not let it rest there. We will take you to the written records of each of these hospitals and show you how each one of these hospitals in turn had to succumb to this pressure and thus become co-conspirators with the defendants against the Group Health Association, and thus complete and make effective the boycott against Group Health Association.

CLASSIFICATION OF HOSPITALS

Now, before outlining in further detail what the evidence will show about the workings of that boycott I shall explain to you certain circumstances which gave the A. M. A. primarily and the District of Columbia Medical Society also the power to bend the hospitals to their will, and thus exercise control over those hospitals. The evidence will show that the power of the A. M. A., the big Chicago corporation, sprung primarily from its ability to withhold from any hospital certain all-important advantages in the matter of hospital intern training for residents. And the evidence will further show that the power of the District of Columbia Medical Society sprung primarily from that society's power practically to unstaff any hospital which the District Medical Society did not see fit to grant its approval to. Now, first, as to the A. M. A. power! It is customary for medical students, after graduation, to serve one or more years in hospitals for experience; they are called interns. They do it to gain more experience before they branch out for themselves. And when a medical graduate desires to specialize he may spend additional time in these hospitals as a resident, where he renders valuable services to the hospital but in return receives very little money. For a number of years the A. M. A. has undertaken to maintain a list of hospitals throughout the United States approved by it as qualified to give such training; and it is the only large organization in the country that does that. We will show that this approval, once acquired, is of immense value to any hospital, because if it is withdrawn that hospital suffers a great loss of prestige, and a black eye. Furthermore, since interns and residents will put in their time only in an approved hospital, one not approved cannot attract these men. In that event the hospital has to go out on the market and employ other doctors who have received their postgraduate training elsewhere.

The Government evidence will show that since A. M. A. has embarked on such an approval program it is essential to any Washington hospital not to be left out. Typical of such evidence is a letter which was written in August 1937, right here in this conspiracy, by one of the superintendents of these Washington hospitals to the defendant A. M. A., in which it was said that "No words can express my distress at the possibility of losing the approbation of our intern training school," and that such loss would prove a dire catastrophe to the hospital. And that ability to grant or withhold its approval at the will of its heads gave the A. M. A. power to impose such conditions as it pleased in return for that approval. And we are prepared to show—this is not theory but actual practice—we are going to introduce direct evidence to show that the A. M. A., through its officer and agent, one of its full-time employees, exercised this power upon five Washington hospitals during the period of this conspiracy, and in furtherance of its objectives. Dr. Cutter is a full-time employee of the A. M. A. He is the secretary of the A. M. A., Council on Medical Education and Hospitals, and, as such, he is charged with the duty of recommending to the A. M. A. which hospitals shall be given its approval or denied its approval. Shortly after Group Health Association was organized, Dr. Cutter was informed of that fact by one of the members of his counsel located here in Washington, who wrote him at once, and with that knowledge in his possession, in March 1937, Dr. Cutter invoked a regulation of the A. M. A. that only members of the American Medical Association be admitted to the staffs of its approved hospitals, and made written demands upon the private hospitals in Washington here that they permit nobody not a member of the A. M. A. to be on any of their medical staffs. Those letters were expressed graciously and courteously enough but they were none the less a boycott. And during the summer and fall of 1937, Dr. Cutter succeeded in obtaining from four of the Washington hospitals—Colonial, George Washington, Georgetown and Providence—assurances in writing that they would comply with this demand of the A. M. A.; and in addition to these assurances from these four he received from another, a fifth Washington hospital in writing, a communication of its willingness to comply with this demand. We will show that compliance with this demand resulted in a situation where a doctor, although licensed to practice under the laws of the land, was not permitted to care for his own patients in any of these five Washington hospitals if, for any ground, reasonable or unreasonable, he should not be admitted to membership in the A. M. A., through one of these local societies, or if, for any other reason whatsoever, he should be expelled from the local society and, therefore, from the A. M. A. This demand of the A. M. A., and the responses which it got from these hospitals, operated directly to exclude Group Health Association doctors from these hospital facilities.

In addition to the activities of Dr. Cutter which I have described, we shall also offer in evidence testimony to show that the A. M. A. permitted the District of Columbia Medical Society to exert its pressure on the Washington hospitals to bring about the exclusion of Group Health Association doctors from these Washington institutions. The connection of the defendants Drs. Fishbein, West and Woodward—these full-time employees of the A. M. A.—in pointing out to the profession generally and to the members of the District of Columbia Medical Society particularly, the use of this weapon of exclusion, will also appear in the evidence. The defendant Fishbein is the editor of the A. M. A. Journal; the defendant West is the general manager for the A. M. A. The evidence will show that they were formally authorized to bring the Group Health Association's activities to the attention of the medical profession; and that acting under such authority they caused to be published in the A. M. A. JOURNAL of October 2, 1937, an article attacking Group Health in highly clinical terms; and that article was written by the defendant Woodward of the A. M. A. and was disseminated among these 95,000 members of the organization throughout the country. Special pains were taken, the evidence will show, to see to it that it got to the local doctors and to emphasize, among other things, these pointed statements with reference to Group Health Association. Particularly was attention invited to those members of the profession who were characterized as having medical services, to be by them in turn sold to others, and the fact that such doctors would be looked upon by the profession generally as being on the outer verge of ethical practice, if not altogether lost. As to those the communication stated, "It is not clear how they are to obtain qualified consultants or procure hospital services for their patients. In any event medical care in the associations would likely to be handicapped by difficulties likely to be experienced in obtaining the best consultants' services and hospital facilities," adding that those who had for sale their services to an organization like Group Health Association for resale, "are certain to lose professional status."

Now, if the true meaning of that paragraph is not clearly expressed we will show by other evidence that the other defendants expressly took note of its implications.

Now, let me return to a description of the evidence on those points against the District of Columbia Medical Society. The local district society had also set up machinery whereby it could influence the policy of the hospitals in Washington. Its constitution, which will be offered in evidence, forbids its 825 members from accepting assignments with or continuing to serve on staffs of any hospital not approved. By the simple with-

drawing of its approval from any of these Washington hospitals, for any reason whatsoever, the local defendant, District Society, could unstaff any hospital it chose; and this policy to unstaff any hospital by the simple expedient of withdrawing its name from the approved list gave the District Society power to impose the unreasonable requirements it did impose and which the evidence will establish were imposed upon these hospitals. The evidence will show that the District Medical Society and its members were quick to adopt and put into effect this suggestion that emanated from the parent body, the A. M. A., in Chicago. Just a week before the A. M. A. JOURNAL article appeared on October 2, 1937, at a meeting attended by six of the defendants here, a resolution was passed unanimously that the membership be admonished to read the entire article for their own information and guidance; and we will show that four days thereafter the District Medical Society adopted the resolution offered by one of the defendants named in the indictment, and seconded by another, to the effect that a copy of this article be sent to each member of the Society as an enunciation of its future policy with respect to combating the Group Health Association. The evidence will show also that the author of that resolution told his associates that such resolution did express the policy of the society. And we will show that the communication to which I have heretofore referred stating:

"As to the ethical responsibilities of the Medical Society of the District of Columbia, and its members, the conclusion to be drawn from the policy as announced from the A. M. A. is inescapable"; and again referring to those combinations of doctors who sell their services to organizations for resale as being, and I am quoting, "certain to lose professional status."

And the evidence will show that the resolution expressly stated that the District of Columbia Medical Society is in full accord with the contents of the communication referred to; of such report, that is, the A. M. A. article, both as to the established facts therein set forth, and the implications to be drawn therefrom.

The evidence will further disclose that this feature of the plan, the hospital boycott feature which emanated from the A. M. A. to combat Group Health Association, merely confirmed and supported what already had been plotted by the local defendants of the District Medical Society. The proof will reveal that the formation of the Group Health Association had been discussed by the Executive Committee of the defendants at a meeting early in June, 1937, attended by a number of individual defendants, and that at that meeting one of the co-conspirators explained that the medical profession had two weapons; one, forbid consultations with physicians doing this type of work; and two would be to withhold approval from hospitals that would take in cases or assist the movement in any way. At a later discussion of the movement this same group were told that there were two ways available to combat Group Health Association: one, to discipline their own members who undertook to participate; and two, the possibility of restraining the hospitals through pressure on their staff.

During the summer of 1937, as I have said, these various subcommittees were appointed to make recommendations with regard to Group Health Association. One of these subcommittees, of which Dr. McGovern was chairman, and Dr. Hooe a member, presented a report in writing to the Executive Committee on July 12, 1937. We will introduce that report in evidence, including the statement thereof "The Medical Society by its present control over its members and through them of the hospitals, can adequately fight, if it is so desired, these small units. Full-time employees of the corporations could probably easily fail to be put on courtesy lists of the hospitals for one reason or another without the fact of the connection with the cooperative being even mentioned," and I still continue to quote, "In fact, any of the above methods would necessarily have to be camouflaged to the nth degree."

I have heretofore told you how the purposes of the A. M. A. and the District Medical Society were to be served through action by and pressure upon their own members; also how by the simple expedient of omitting the name of Group Health Association from the list which it approved, the white list, the association was effectively barred from and denied privileges which it sought to obtain on a basis equally with others. I shall now point out to you that there is evidence that this white list was sent to each one of the Washington hospitals by the District Society and that it was intended to and that it did constitute a direct threat to such hospital of the consequences they might expect if they granted hospital facilities to Group Health Association or any of its doctors. But the defendants were not content with that. The evidence will reveal that the Executive Committee of the Society, attended by seven of these defendants, decided that the Society send a more pointed letter to each of these hospitals, directly asking these hospitals for their cooperation. And this proposed letter, characterized by the defendant Willson as a veiled threat to the effect that if the hospitals did not comply the society would unstaff them, was sent. And we shall further show that in moving adoption of this letter the defendant Hooe moved that the letter warn the hospitals that if they failed to cooperate in every way they might not be on the approved list. The minutes of that meeting will show that while a discussion was underway relative to sending that letter one member inquired, and I quote, "If it was meant that the members of the Society would not be permitted to practice in the hospitals who did not subscribe? In other words, if they attempted to practice in the hospitals not approved whether the members of the Society would be duty-bound to keep clear of such hospitals."

The minutes further show that Mr. Sprigg, Dr. Sprigg, replied that that interpretation was correct. The minutes also reveal that some of the members thought that was too bald and in lieu of it the Medical Society at its meeting on November 3, 1937, attended by about 160 members, including eight of the defendants, determined to obtain this cooperation from the hospitals by less open and more facile methods. The minutes of that meeting will show that the Society formally adopted a resolution.

And this documentary evidence will show further it was moved first by Dr. Willson and seconded by defendant Martel, and it was placed in this indictment by the grand jury in its return. This is the resolution:

"WHEREAS, The Medical Society of the District of Columbia has an apparent means of hindering the successful operation of Group Health Association, Inc., if it can prevent patients of physicians in its employ being received in the local private hospitals; and

"WHEREAS, The Medical Society of the District of Columbia has no direct control over the policies of such hospitals as determined by their lay boards of directors, except through its control of its own members serving on their medical staffs; and

"WHEREAS, Conflicts between the Medical Society of the District of Columbia and any local hospitals arising from an attempt to enforce the provision of Chapter IX, Article IV, Section 5, of its Constitution should be assiduously avoided, if possible, because of the unfavorable publicity that would accrue to its own members; therefore, be it

"Resolved, That the Hospital Committee be, and is hereby, directed to give careful study and consideration to all phases of this subject and report back to the Society, at the earliest practicable date, its recommendations as to the best way of bringing this question to the attention of the medical boards and boards of directors of the various local hospitals in such a manner as to insure the maximum amount of practical accomplishment with the minimum amount of friction and conflict."

We shall introduce evidence to show you that this hospital committee which was thus assigned the task of working out the best way of approaching the Washington hospitals as stated in that resolution, consisted of at least eleven doctors, each of them being a member of the District Medical Society and each of them having a position on the regular or attending medical staffs of one or more of eleven of these private hospitals; that is, on the staff that manages the medical affairs of the hospital.

The hospital committee was so constituted by the District Medical Society that it included a representative of the attending staff of each of these eleven hospitals, and the defendant Warfield was the chairman of the committee, and the defendants Young and Martel were members of it.

And I have stated before, the evidence will show Group Health Association opened its clinic November 1, announced its initial staff of doctors, Dr. Brown, medical director; Drs. Selders, Hulburt, Lee and Scandiffio.

I tell you that Lee and Scandiffio were members of the District Medical Society in good standing and members of the A. M. A. in good standing.

Dr. Lee and Dr. Scandiffio already had courtesy staff privileges at a number of the Washington hospitals.

Dr. Richardson when he came a little later had his courtesy staff conceded.

We shall show you the fact that Lee and Scandiffio enjoyed these privileges was specifically pointed out by the defendant Neill, then president, at a meeting held November 11, 1937, and when this was pointed out the defendant Yater suggested that the hospitals should be contacted and assurance should be given that no member would be allowed to practice there if he is a member of the staff of Group Health Association.

And the first report of the hospital committee which it made at that meeting and which was not strong enough, was reported back to that committee by the Society on the grounds that there seemed to be no assurance that the members of the staff of Group Health Association are not already or might not become members of the staffs of the hospitals.

The evidence will show you how completely succumbing these hospitals were to any such pressure from the Medical Society.

On November 18, 1937, the secretary of the executive committee of the Georgetown University Hospital, an independent institution, wrote actually asking this Society whether the hos-

pital should accept Group Health Association patients; and whether the hospital's medical staff should consult with Group Health Association physicians.

We shall show you that at another meeting, December 1, 1937, the defendant Warfield, as chairman of the hospital committee, again reported for the committee, offering a resolution which was adopted then that the hospitals should follow the recommendations of the A. M. A., limiting their entire staffs to A. M. A. members.

And the evidence will show that the same defendant Conklin was again authorized to send that resolution—a copy of it—to each one of the Washington hospitals.

And he did so.

The evidence will reveal that all twelve Washington hospitals succumbed to this pressure of defendants; and that these boycotts inaugurated and fostered by the combination and conspiracy charged in this indictment were completely successful.

So effective were they that on March 28, 1938, the same defendant Warfield, reporting for his hospital committee, was able to announce triumphantly to the Society:

"Only three of the local hospitals, Columbia, Sibley, and George Washington, have not followed this recommendation of the A. M. A. All of the local private hospitals are cooperating fully with the Medical Society with respect to Group Health Association.

"At the present time only one of the local hospitals has on its staff lists the name of a physician connected with Group Health.

"This hospital does not revise its staff lists annually as do the other hospitals but it has assured the chairman of the hospital committee that steps have been taken to deny this physician hospital privileges."

Once the defendants succeeded in inducing these hospitals to adopt that rule that courtesy staff privileges would be denied any doctors who were not members of the A. M. A., the defendants' task, as you can see, in making this boycott effective, became comparatively simple.

All they had to do was to expel those members of Group Health Association's medical staff who were members of their Society, Lee and Scandiffio, and to bring Harris County's Society into the conspiracy and get them to expel Dr. Selders. And to see to it that all applications that the Group Health Association doctors might make to any of these hospitals would be denied independent consideration of those hospitals but which would be turned down because of this agreement which they had arrived at with hospitals through their coercion.

You will recall that one of the subcommittees of the executive committee of the Society had concerned itself with Group Health Association and had reported as early as July 12, 1937, that any doctor connected with Group Health Association could probably easily fail to be put on the courtesy lists of the hospitals, for one reason or another, without the fact of his connection with the cooperative being even mentioned, and, in fact, any competitive methods would necessarily have to be camouflaged to the nth degree.

And this, the evidence will bear out, is exactly what happened.

We will introduce letters which the president of the Group Health Association, who will take the witness stand, wrote these hospitals in 1937, with the exception of Casualty and Washington Sanitarium—those two were replied to later telling them of Group Health Association—requesting that they admit the members of Group Health Association at the request of the Group Health Association medical director, and requesting also that the Group Health Association surgeon, Dr. Selders, be permitted to attend these patients while hospitalized.

And he enclosed with these letters a statement of Dr. Selders' qualifications and experience.

And later on similar applications were made by Group Health Association to Casualty and Washington Sanitarium.

And applications went later on to some of the hospitals to admit other of the Group Health Association doctors in addition to Dr. Selders. It wasn't just applying to him.

And Dr. Selders was given temporary privileges in normal obstetrics only, at Columbia Hospital.

Dr. Selders was a surgeon and he was given some of the temporary privileges in normal obstetrics only, temporary privileges for about a month for emergency cases at Garfield.

And Dr. Selders and some of the other Group Health Association doctors were permitted to treat a few Group Health Association cases at a few of the other hospitals.

Ten of the Washington hospitals to which Dr. Selders applied requested him to fill out formal application blanks giving his references, in addition to his education and experience.

When he did so, his application and references were referred by the hospital authorities to the attending medical staffs of those hospitals and their committees, which staffs and committees were composed almost exclusively of members of the District Medical Society and of the A. M. A.

And from the records of the various hospitals which we will offer in evidence, you will perceive that at least ten of the individuals charged as defendants in this case were members of the medical staffs or credentials committees of a number of these hospitals and acted thereon to protect their respective hospitals from admitting their competitors, Group Health Association doctors.

Dr. Selders' written applications, which he was asked to submit by ten of these hospitals, will be here in evidence.

And of these ten hospitals to which Dr. Selders supplied references, seven did not even bother to communicate with him.

And, the evidence will show that eight of the twelve Washington hospitals to which Dr. Selders applied for courtesy privileges formally refused to admit him there; four simply failed to grant his application. And Dr. Selders was never admitted to the courtesy staffs of any of these hospitals.

And we will offer in evidence the minutes of these various boards, staffs and committees of the hospitals and their correspondence, and it will be clearly revealed therefrom that this treatment accorded the Group Health doctors by all of these boards was directly caused by the pressure which these powerful defendants in this case exerted upon them, and by the opposition of the defendants to their competitor, Group Health.

And this situation was not confined to Dr. Selders. There is more evidence of this character relating to him than to any of the other Group Health Association doctors because he happened to be a surgeon of Group Health Association, and, as a surgeon, hospital privileges were particularly important to him. But let me make this clear, that the evidence will be clear that this hospital boycott was planned by the defendants before they even knew Dr. Selders, and that it was aimed not merely against Dr. Selders and not against Dr. Selders as such, but against the Group Health Association and any Group Health doctors who should request the privileges of treating Group Health patients in the hospital.

For example, one of these hospitals went so far as to give written instructions to its admitting officer listing all six of the Group Health doctors by name and stating, "These doctors are not to be allowed in at any time. And also use every precaution that no Group Health Association patients be admitted."

Dr. Allan Lee, before he was induced by the defendants to abandon Group Health by these charges that they brought against him, had applied for courtesy staff privileges at George Washington Hospital.

The defendant Washington Academy of Surgeons—I haven't told you much about them yet but that is coming along; it is part of the picture—this group of surgeons, on Dec. 8, 1937, two days before Lee was induced to resign, recommended to the George Washington Hospital that it disapprove Dr. Lee's application.

There is another instance, in the case of Dr. Lee.

When he joined Group Health Association he had courtesy privileges at the Emergency Hospital; on October 30, when he decided to join Group Health, he attempted to resign from the District Medical Society.

This resignation was not acted upon by the District Medical Society and later Dr. Lee withdrew it when they brought these charges against him, because he did not want to quit under fire at that time.

But, on November 1, just two days after he had presented his resignation to the District Medical Society, he received a letter from the Emergency Hospital telling him that his courtesy privileges at that hospital had been revoked.

Dr. Hower, while he was a member of Group Health Association, applied to the Georgetown Hospital where he had received his training, his own Alma Mater. He merely sought the privilege of treating an emergency case there.

And that case was the subject of discussion by the executive committee of the medical staff of Georgetown, and as a result of it, Georgetown adopted for the first time, a rule strictly defining what cases should be considered emergencies.

At Sibley Hospital the executive committee of the medical staff required an investigation to be made to ascertain whether Dr. Hulburt had any privileges there.

Dr. Hulburt also applied to Columbia.

Now, this is significant:

He applied merely for permission to treat a case of normal obstetrics. And, so long as he remained a member of Group Health Association, that application at the Columbia Hospital was held in abeyance.

But, when he resigned from Group Health Association under pressure in April of 1938, April 25, then, and only then, after he had left Group Health Association, was he rewarded with admission to Columbia Hospital. And his application there was granted in June of 1938.

That is not all. The rest of the doctors as well.

Here in 1938 Dr. Halstead applied for courtesy staff privileges at a number of Washington hospitals.

He too was a member of the Group Health staff, up to the time the indictment was returned in this case, Dec. 20, 1938—no courtesy staff privileges at any of these hospitals had been accorded to him.

The evidence will show that other Group Health Association members received the same treatment.

It will show that some of the Group Health doctors, as I have said, although not accorded privileges to treat Group Health Association cases at any hospitals except in emergencies, did from time to time treat other cases during the hospitalization. But even in such cases these doctors recognized that they were there merely on sufferance and often the hospitals required that their connection with Group Health Association be conceded and that the treatment take the form of treatment by the doctor as his own personal cases, in these rare cases where he was permitted to do it.

And we will also in this evidence show examples of harsh, outrageous, impossible and unreasonable treatment accorded to the members of Group Health Association by a number of these hospitals.

Some of the patients taken to the Washington hospitals following automobile accidents or for serious operations, were turned away when they or their relatives insisted upon treatment by the Group Health Association doctors of their own choice.

They were forced to seek accommodations elsewhere.

In one instance such expulsion from the hospital occurred after a Group Health Association member had been admitted as a patient, put to bed and given morphine, preparatory to operation, then denied services of a surgeon, Dr. Selders, because of his connection with Group Health.

She had to dress, in this dangerous condition, leave the hospital, get her own taxicab. Her friends were with her and they got it at the door. She was seriously sick and in this stupefied condition as a result of morphine.

In other instances Group Health Association patients in need of emergency care were kept waiting, their treatment delayed, their health jeopardized, while the hospital authorities haggled and deliberated over the question of admitting.

And furthermore the evidence will show that one of these hospitals went so far in their boycott of Group Health Association members that it refused consistently to accept Association checks in payment of the hospital bills—made them get cash and bring it in there.

Even in cases where the members of Group Health were operated on not by Group Health doctors but as private patients of doctors not connected with Group Health in any way.

Their mere association with Group Health made these hospitals refuse to accept any Group Health Association checks even.

WASHINGTON ACADEMY OF SURGEONS

Now, I promised to tell you about the part the Washington Academy of Surgeons played in this consipracy.

I have explained before that it is an unincorporated association of surgeons here in the District of Columbia.

And after Group Health Association opened its clinic, Nov. 1, 1937, we find the president of the Washington Academy of Surgeons inviting Providence Hospital to refer applications made to it for courtesy privileges, over to the Washington Academy of Surgeons for its recommendation, and the executive staff of Providence Hospital voted to do so.

And in the same month, November 1937, Georgetown Hospital also voted to refer applications for courtesy privileges over to the Washington Academy of Surgeons.

And, five of the twelve Washington hospitals to which application was made by Dr. Selders for courtesy privileges referred his application over to the Washington Academy of Surgeons.

And this Academy recommended to each of these five Washington hospitals that Dr. Selders' application be disapproved.

Washington Academy of Surgeons supplied the hospitals with their excuse. It stated, however, no grounds or reason for such recommendations, and the proof will show that it deliberately acted in this way after the most inadequate investigation, if it can be called an investigation at all, of that applicant's qualifications or experience; and the written records of this defendant, Washington Academy of Surgeons, will be offered in evidence and will clearly reveal the true reason for this defendant's adverse action.

Notwithstanding the fact that the chairman of the Academy's committee on hospital privileges was expressly warned again by the secretary of Washington Academy of Surgeons not to permit Dr. Selders' connection with Group Health Association to influence its decision, the executive council of the Washington Academy of Surgeons on Dec. 10, 1937, formally voted to give weight to what they term the ethics of the applicant. Poor ethics!

Ethics include violations of some economic restrictions of the A. M. A. known as the principles of medical ethics.

Thus there is written proof that Dr. Selder's connection with Group Hospital Association objected to as unethical by the defendant American Medical Association, and which the defendant, the District Medical Society, as I told you yesterday, resolved formally to consider unethical, was the real reason for the defendant Washington Academy of Surgeons lending its aid to the hospital boycott against the Group Health Association doctors.

I shall now yield to my colleague, Mr. Kelleher, who I understand will more briefly state other elements of this case, which evidence to be presented to you will demonstrate are true beyond any reasonable doubt.

Additional Opening Statement on Behalf of the United States by Mr. Grant W. Kelleher

Mr. Kelleher:—May it please the Court, and ladies and gentlemen of the jury, what Mr. Lewin has said yesterday afternoon and this morning explains the evidence which we shall offer concerning Group Health Association and the alleged conspiracy of the defendants to prevent its operation.

Thus it is this conspiracy here in the District of Columbia, and only this, for which the defendants are on trial.

But while the alleged conspiracy for the District of Columbia has been for something less than two years, it had the country as a whole for its background, and for a prologue it goes back several years before the commencement of the alleged conspiracy.

THE BACKGROUND

Since you cannot understand fully the significance of what occurred here unless you view the conspiracy in its proper perspective, not as an isolated local occurrence but as a part of a national picture, we propose to show you what may be termed the background of the conspiracy.

In substance, we intend to prove that Group Health Association and similar organizations throughout the country were designed to solve a pressing social problem, that is, the adequate distribution of medical care; and that the efforts of the defendants to prevent the operation of G. H. A. in the District of Columbia were but the outgrowth and result of a nationwide long-range scheme of the defendant American Medical Association to stifle competition, economic competition, from such plans.

We intend to present this evidence through the testimony of various witnesses and through numerous doctors.

The most important of the witnesses will be Dr. Hugh Cabot and Dr. Michael Davis.

Dr. Cabot, as many of you may already know, is one of the foremost surgeons in the United States. For many years he was a highly successful private practitioner in Boston. He has been professor of surgery at several prominent universities in the United States. Until quite recently he was a consulting surgeon at the famed Mayo Clinic. He is now medical director of an organization in Boston very similar to Group Health Association. And Dr. Cabot is and has been for several years a member of the defendant American Medical Association.

A second important witness on this phase of the case is Dr. Michael Davis, who is also an outstanding figure in his own field. While not a doctor of medicine but a doctor of philosophy, he is an expert on medical economics; that is, he concerns himself not with the professional side of the practice of medicine, but with its economic side, that is, so that doctors' services and hospitals' services are made available to men and women everywhere. Dr. Davis has been associated with various clinics, hospitals, and dispensaries, and for some time was a consultant on hospital organization. Since 1920 he has been a member of committees of two philanthropic foundations, the Rockefeller Foundation, and the Julius Rosenwald Fund, which committees have been engaged in extensive studies seeking to determine how to improve the distribution of health services.

Now these two witnesses, as I have said, will give you the background of the conspiracy. They will show you, in other words, the need for Group Health Association, the need for group practice, to reduce the cost of care; the need for prepayment to spread the cost of care. Dr. Cabot will compare for you the practice of medicine today with what it was some forty or fifty years ago, in his early years of practice. He will tell you that there has been more progress, more advances in the practice of medicine within the last fifty years, than there had been during the entire period of recorded history prior to 1890. In 1890 the amount of knowledge then available on medical matters

could conceivably be learned by a single man. Consequently most doctors were general practitioners, family physicians. And a specialist was rare except in a few fields. Diagnosis was largely based upon physical examination; observation of the doctor through his five senses, looking at the patient's tongue, holding his ear against the patient's chest wall. The equipment of a doctor was very simple and most of it could usually be carried in his little black doctor's bag. Knowledge of disease was extremely limited. For example, appendicitis was relatively unknown, and people were frequently said to go into a decline when, in fact, they were suffering from tuberculosis. Dr. Cabot will tell us that since 1890 there has been literally a revolution in the practice of medicine. And as a result of this revolution, practice today is far better developed, more scientific, more exact, than it was fifty years ago. Bacteriology has given us serums and vaccines for smallpox, diphtheria, and meningitis. Thanks to pathology, it is now possible to detect the presence of disease in the lung by examining thin sections of the diseased tissue; and the presence or severity of infection in the body can be determined. Drugs and their administration have become a science. Physiology has been revolutionized. Since 1890 physics has given us not only radium for the treatment of cancer and the electrocardiogram for the diganosis of heart disease, but it has given medicine the most important single method of diagnosis in the entire field of medicine, the x-ray. Now, of course, this phenomenal progress in the last few decades in the diagnosis and treatment of disease is of the greatest value to the American people. And, at the same time, it is to the eternal credit of the man of medicine and science responsible for it. And I want to say here and now, that nobody in this case intends to, or could, detract from the esteem and credit due these men of science and medicine. But, in order for the people to reap the benefits of this progress, it is important that there be an adequate system of distribution. That is, that the medical services of the men and institutions who can give it be made more available to the men and women who need it.

You will see from the evidence in this case that there are many well informed men and women today who believe in good faith and after careful study that the distribution of medical care has failed to keep pace with the problems presented by the technical advancement to which I have referred; and that as a result there is a large body of American people today who either do not receive adequate medical care or are oppressed by the heavy financial burden of the care which it does receive. The evidence in the case will show that there are at least two reasons for this. In the first place, the progress which has been made has so substantially increased the cost of medical care that under the existing system of private practice by a single doctor on a fee-for-service basis, adequate medical care is beyond the economic reach of many people. The increased knowledge in the field of medicine today has made it really impossible for a single doctor to even attempt to grasp the entire field, or any substantial part of it. And, consequently, more and more doctors are specializing. The result is that the patient, at least in serious illnesses, needs the services of not a single doctor but sometimes two or more. And, of course, under the existing system, each doctor is entitled to and must be paid a separate fee. In addition, doctors of today need far more education than the doctor of yesterday required. Most doctors today spend eight years in medical school. And then from one to two years or more as interns or residents in hospitals. The equipment of the doctor is far more elaborate, more expensive, than was that of his predecessor. For example, he must have available a well equipped laboratory, which in turn requires a skilled technician. He must have an x-ray; he must have a means for determining blood pressure. And the end result of this increase in education and equipment which the doctor of today requires is that the investment and overhead of the doctor is far greater than it was forty years ago. And that, of course, is reflected in substantially higher medical bills for the patient.

The second reason lies in the fact that illness is as unpredictable as lightning. But unfortunately, unlike lightning, it strikes more than once in the same place. Dr. Cabot and Dr. Davis will explain to you this problem; and that may be termed the uneven incidence of illness. They will tell you that one family may go for years without a single serious illness, as many of you know, and that during that same period of time another family may be literally plagued with illness, so that the cost of care for the first family is negligible, while the second family may be bankrupt by medical bills.

COMMITTEE ON THE COSTS OF MEDICAL CARE

The evidence will show that this map of the adequacy of medical care received by the American people was the subject of comprehensive research by a committee of distinguished laymen and physicians known as The Committee on the Cost of Medical Care. Dr. Davis was a member of that committee, and he will describe it and its activities to you. He will tell you that its chairman was Dr. Ray Lyman Wilbur, at present the president of Leland Stanford University, and Secretary of the Interior in President Hoover's cabinet from 1929 to 1933. He will tell you that this committee conducted a careful study of the medical care received by 8,500 families, embracing over 38,000 individuals. The income of these families varied from as low as $1,200 to over $10,000, so that the study represented a cross-section of the entire population.

This study, you will see, clearly establishes that there is a remarkable relationship between the amount of care which a family can afford and the amount which it receives, for that study shows clearly that as the income of the family studied went up, the medical care went up, but as the income of the family decreased the medical care which the family received also decreased; and this even though other studies showed that the amount of illness which any family has is not affected by the income which it receives.

The study showed that families in two or three lowest income groups, receiving less than $3,000 a year, received far less of nearly every form of medical service, including doctors' bills and hospital bills, than the families in the higher income groups. The study also graphically demonstrates the disastrous financial effects of the uneven incidence of illness and how the burdens of sickness are borne by a very few people. The study showed that approximately one tenth of the families studied in all of the income groups paid $41 out of every $100 spent for medical care, but that six times as many people paid only $18 out of every $100 spent for medical care. For example, 5 per cent of the families earning between $1,200 and $2,000 a year paid as much for medical care as 80 per cent of the families.

What the solution is, however, is a difficult matter. I am trying to tell you now that we neither expect nor believe that the evidence in this case will show the complete answer to this problem. This much will appear, however: Group Health Association and similar organizations throughout the country are intended to and may to some extent improve upon the distribution of medical care. Group Health Association seeks to reduce the cost of care by combining together under one roof general practitioners and specialists in the various states; the effect of which is to give a member of G. H. A. the benefit of the joint knowledge of the group and, at the same time, to reduce the cost of the service of the group by eliminating the unnecessary duplication of equipment and facilities which would result if these doctors were engaged in private practice. It seeks to spread the cost of care by a system of periodic regular dues which entitles each member to complete medical care within reasonable limits, irrespective of the amount of care which the member requires.

As I said, there is no assurance, and there can be none, that Group Health Association is the answer to the problem, and no one in this case urges that it is. But when you have heard the evidence which I have summarized I think you will be convinced that the worthwhile objective of the Group Health Association to give that body of the American people which cannot afford medical care some form of medical care, makes it highly desirable that such organizations be fostered and encouraged. And it would be reasonable for you to assume, in the absence of other evidence, that the defendant American Medical Association which purports to be an altruistic, public-spirited organization of scientific men, would be the first to stimulate and encourage experimentation of this kind.

The evidence will show, however, that the American Medical Association has maintained a consistent policy of opposition toward such plans and has taken active steps to oppose in every way it has at its command such organizations throughout the United States.

I have already referred to the findings of the Committee on the Cost of Medical Care. That committee also made certain important recommendations which Dr. Davis will explain to you. He will tell you that 35 of the 48 members of that committee, representing a very substantial majority of the committee and including numerous of the outstanding physicians of the country, recommended that in view of the committee's findings concerning the inadequacy of medical care, persons with small incomes should organize into groups for the purpose of obtaining medical care on a prepayment basis from organized groups of medical practitioners; in other words, the groups should be on a prepayment basis.

I will tell you that a small minority on this committee, consisting of nine members, vigorously opposed this recommendation and took the position that prepayment plans are undesirable.

You will be interested to learn that two of the defendants in this case, the defendants Christie and West, were among those nine dissenting members.

We shall prove to you that immediately after those recommendations of both the majority and minority members of the committee were made public, the American Medical Association unqualifiedly opposed the views of the majority and fully adopted and approved the views of the minority. In editorials written by the defendant Fishbein and appearing in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION the report of the majority was violently criticized and its endorsers publicly excoriated, while that of the minority was undeservedly praised.

We shall show you that at its first meeting after the publication of the views of the Committee the American Medical Association, through its House of Delegates, the governing body, adopted a resolution endorsing the minority report which as I said, opposed group practice on a prepayment basis as expressive in principle of the collective opinion of the medical profession.

On the other hand, we shall show you that in June, 1934, the American College of Surgeons, which consists of 11,000 of the most reputable surgeons of the United States, recommended that experiments with periodic prepayment plans be continued, because they furnish a reasonable expectation of providing for low-income groups more adequate medical care.

One week after this recommendation of the American College of Surgeons was made public the American Medical Association adopted another resolution, condemning the College for its recommendation and demanding that that organization, that independent organization of surgeons, explain to the A. M. A. the reasons for its action.

FUNDAMENTAL PRINCIPLES ADOPTED BY A. M. A.

Finally, we shall show you that in 1934 the American Medical Association adopted general so-called fundamental principles to govern experiments to provide more adequate care to people with moderate means.

It will appear in evidence in this case that the American Medical Association insisted that any plan comply with its general principles if it was to be permitted by the American Medical Association, and that it insisted that all of its local societies enforce these principles.

You will see that one of these principles required that any plan embrace within it all of the qualified physicians within the locality to be served by the plan. Another required that the cost of medical service in any plan must be borne by the patient who could afford to pay at the time the service was rendered.

Thus by the adoption of these "Ten Commandments" the A. M. A. made it impossible for organizations such as Group Health Association to comply, since of course such an organization was limited to the members of their medical staff, and since payment is not contemplated at the time of the rendition of the service, but is taken care of in the form of regular monthly dues.

This evidence to which I have referred will serve to illustrate to you the hostile policy of the A. M. A. toward group practice on the pre-payment basis. But here and now I should like to caution you ladies and gentlemen that this hostility would not in and of itself be reprehensible if the A. M. A. had limited itself to peaceful persuasion in seeking to obtain adherence to its policy.

We shall show you, however, that the American Medical Association did not so confine itself, but that it exerted all of its tremendous powers to force doctors and hospitals throughout the United States to abide by this requirement.

POWER OF THE A. M. A.

At this time please bear in mind what the evidence will show concerning the power of the A. M. A.; how exclusion or expulsion of a doctor from that organization not only gives him a professional black eye but denies to him essential consultation with his fellows; how the system of approval and registration of hospitals makes it possible for the A. M. A. to obtain the ouster from the staff of any hospital approved or registered by it of any doctor of whom the A. M. A. disapproves for any reason whatsoever.

And we shall show you that it was the use of this power to oust from the United States experimentation with plans such as this, which furnished the pattern, the master plan of attack for the conspiracy in the District of Columbia.

We shall prove that doctors in Texas, in California, in Wisconsin were expelled from their local societies for participation in plans like G. H. A., and that in two instances the defendant American Medical Association, through its Judicial Council, approved the action of local societies by itself expelling these doctors from the A. M. A.

You will see from letters from two of the defendants in this case, the defendants West and Leland, that the action of the California Society was taken even though these two defendants knew that the doctors involved were, and I quote them, "thoroughly competent physicians," and that the organization with which these doctors were associated, and I quote again, "delivers good medical service."

You will see that in all of these instances the defendants themselves admit that the one objection which could be taken to these doctors was that they were engaged in contract practice on a prepayment basis.

We shall go further than this. We shall show you that the use of the private hospitals in the District of Columbia to prevent the operation of the G. H. A. had its precedent in action taken by the A. M. A. to utilize its control over hospitals to prevent operation of plans in two other parts of the United States.

TRINITY HOSPITAL

The evidence will show that in 1935 the staff of Trinity Hospital in Little Rock, Arkansas, was engaged in supplying medical care to certain Little Rock citizens on a prepayment basis. On Sept. 9, 1935, the defendant Cutter wrote the superintendent of that hospital demanding an explanation, and when the superintendent, well aware of the hostility of the American Medical Association, in reply did no more than to admit the fact that the hospital was so engaged, the defendant Cutter, in a subtly-phrased letter, threatened to drop the Trinity Hospital from the register of the American Medical Association if it continued in this plan. The staff of Trinity Hospital persisted and refused to yield; and the following year you will see that the defendant Cutter made good his threat by dropping that hospital from the register of the A. M. A. because, as he wrote, "its contract plan makes it inconsistent for us to further endorse that institution."

In other words, that Cutter upheld action by the A. M. A. the effect of which was to disgrace Trinity Hospital in the eyes of the medical world.

MILWAUKEE MEDICAL CENTER

I have already told you that you would learn from the evidence in this case that certain doctors in Wisconsin were expelled from their local societies and from the A. M. A. for their participation in a plan like the G. H. A. The name of that plan was the Milwaukee Medical Center; and we shall prove that even while the expulsion proceedings of the local society and of the A. M. A. were pending against these doctors, the defendant Cutter invoked the resolution of the American Medical Association that doctors on the staffs of approved hospitals be members of the A. M. A.; he invoked that resolution as against all of the Milwaukee hospitals for the purpose of obtaining the ouster from those hospitals of the doctors associated with the Milwaukee Medical Center. And that resolution, incidentally, of the American Medical Association was adopted, according to the defendant Cutter himself, and I quote him, "to smoke out from the staffs of hospitals certain doctors who are objectionable and whom the hospital felt a delicacy about removing."

As I say, Cutter invoked that resolution against all Milwaukee hospitals, and they all yielded to that pressure except one. Mount Sinai Hospital at first refused to take the action which Cutter had recommended.

You will see from the evidence which we shall offer that in 1938, simultaneously with the conspiracy here in the District of Columbia, the defendant Cutter wrote the superintendent of Mount Sinai Hospital and told him that in view of the refusal of that hospital to drop the members of the Milwaukee Medical Center from its staff, he recommended to the Judicial Council of the American Medical Association that the hospital be dropped not only from the approved intern list but from the register of the American Medical Association. In this instance you will see that this threat brought prompt results. Within a few days the superintendent of Mount Sinai notified the defendant Cutter that all of the doctors of the Milwaukee Medical Center had been dropped not only from the active staff, but from the courtesy staff of that hospital.

This completes my side of the evidence which we shall offer to show the nation-wide opposition of the American Medical Association to group practice on a prepayment basis.

I come next to a consideration of the reasons for the opposition of the defendants to G. H. A.; and this, in turn, requires me to consider, first, the reasons which the evidence which we shall offer will show the defendants at times assigned for their opposition and the reason which the Government contends actually motivated the defendants.

In documentary evidence which we propose to offer you will see that some of the defendants urged that they oppose G. H. A. Why? Because, first, its set-up would necessarily result in a

reduction of the quality of medical service below that of the private medical practitioner, and, second, because G. H. A. was illegal.

So far as the first reason is concerned, I not only point out that the evidence will affirmatively show, first, that G. H. A., by being a purely voluntary organization, by permitting its members to drop the organization or to sign up at their own free will, gives to those members all of the freedom of choice which is either necessary or desirable; secondly, that the fact that the members of the G. H. A. are paid salaries instead of fees in no way affects the quality of medical care given by those members; and, thirdly, that the medical affairs of the Association are handled entirely by a medical staff, under a medical director, and without any interference whatever from the lay board.

QUALITY OF MEDICAL CARE

I am sure that when you have heard that evidence you will realize that the quality of medical care which G. H. A. gives to its members is at the very least the equivalent of the care which the average medical practitioner in the District of Columbia gives to his patients.

The second reason of the defendants, that is, that G. H. A. was illegal, requires some explanation by me. You will find from the evidence which we shall offer that the defendants at times urged early in the period of the conspiracy that G. H. A. was illegally organized, for one of two reasons: either, first, it was engaged in the practice of medicine without a license, or, secondly, it was engaged in the insurance business without having complied with the insurance laws of the District of Columbia.

Now, of course, ladies and gentlemen, whether Group Health Association is illegal and whether, even if it is, that constitutes a defense of the activities with which the defendants are charged, are matters of law for his Honor on the bench and not for you. But while you are not concerned with the legal aspects of this matter, you will be interested in certain circumstances concerning the successful efforts of G. H. A. to adjudicate this matter. This is so because we believe the circumstances will demonstrate to you that the defendants, in opposing G. H. A., were not particularly concerned with obtaining enforcement of the laws of the United States, but we insist they were using this claim to hide their real motive; that they entered into this conspiracy to suppress the competition of G. H. A. in the practice of medicine in the District of Columbia.

The facts which we shall show are briefly as follows:

Late in 1937 certain officers of G. H. A. became aware of the claims of the defendants concerning its illegality. They therefore approached the appropriate officials of the District of Columbia charged with the enforcement of the laws which were involved, and G. H. A. then determined to file suit to determine the legality of its organization once and for all. Accordingly, on Jan. 27, 1938, suit was filed in the District Court of the United States for the District of Columbia. That is the same court in which you ladies and gentlemen are now sitting. The suit was filed to determine whether G. H. A. was engaged in the practice of medicine or in the business of insurance, in violation of the laws of the Distrct of Columbia. Mr. Justice Bailey, a colleague of Mr. Justice Proctor who presides here, presided in that case.

On July 27, 1938, Mr. Justice Bailey handed down a decision in favor of Group Health Association, holding, first, that it was not engaged in the practice of medicine; second, that it was not engaged in the business of insurance, and therefore that it was not violating any of the laws of the District of Columbia. In other words, he held that G. H. A. was a perfectly legitimate, legal organization under the laws controlling in the District of Columbia.

The evidence will show that the alleged conspiracy was in full swing and had been for many months prior to the filing of this suit in January 1938. This suit, as I have said, was pending for a period of six months. Now, if the defendants' justification of their activities on the ground of illegality was really in good faith, one would expect that the filing of this suit furnished a happy solution to their problem and that there would have been a cessation of their activity during the pendency of the suit and after that decision.

But what are the facts which we shall prove? We shall show you that on March 16, while this suit was pending, the District Medical Society formally expelled a physician from G. H. A. membership. On March 9, while this suit was pending, the defendant Harris County Medical Society filed formal charges against Dr. Selders looking toward his expulsion.

While this suit was pending the defendant, Washington Academy of Surgery, recommended to five of the local hospitals that they deny hospital privileges to Dr. Selders.

In the spring of 1938, while this suit was pending, Dr. Thomas Lee, acting upon the advice of the defendant Neill, president of the local Society, refused to consult with G. H. A. Dr. Price concerning a patient with a serious heart ailment.

On March 28, 1938, while this suit was pending, the Hospital Committee of the Medical Society reported on the floor of that Society that all of the Washington hospitals were now cooperating against G. H. A. and that the only hospital which had a member of G. H. A. on its staff had given assurances that that member would be dropped.

That is some of the evidence which we shall offer concerning the activities of the defendants during the pendency of this suit.

Let us now look to the evidence concerning the defendants' activities after this suit was determined in favor of G. H. A.

It will appear in evidence that on July 28, 1938, the day after this decision, G. H. A. wrote a letter to all of the local hospitals calling attention to this decision and requesting that the members of its medical staff be now admitted to the local hospitals. What was the result? One hospital even went so far as to reconsider the matter and then deny Dr. Selders the privilege. Three of the local hospitals refused to consider any change. The rest of the hospitals ignored the letter of July 28.

Moreover, we shall show you that as late as September 1938, almost two months after this decision, a young doctor in New York by the name of Hammerly, who had been asked by Group Health Association to consider a position on its staff, wrote unwittingly to two of the defendants in this case inquiring whether A. M. A. would be offended if he took such a position.

We shall show you that the defendant Fishbein wrote this young doctor telling him that—

"It has been my observation that young men who depart from the established practices of the American Medical Association find it exceedingly difficult thereafter to achieve prestige among their fellows."

And we shall show you that the defendant West wrote this doctor and sought to discourage him from joining G. H. A. on the ground that G. H. A. was illegal—even though two months before, this court had held that G. H. A. was legal.

This evidence I think will show you that the reasons which the defendants gave at times for their opposition to G. H. A. were not the real basic reasons of the defendants.

What, then, was the real reason? We shall introduce substantial, competent evidence to prove that the real reason of the defendants was business and economic; that is, that they feared the economic competition of Group Health Association and that therefore they embarked upon and carried out this conspiracy to prevent G. H. A. from interfering with the financial return which the local defendants received from the private practice of medicine in the District of Columbia.

We shall prove to you that even before Group Health Association started, the defendants privately conceded among themselves that many people might view the plan as highly desirable, since it represented an effort by responsible, honest, public-spirited men to do something for their fellows if possible. You will see that many of the members of the local Society recognized that there was good reason to believe that G. H. A. had every reason to succeed; and we shall show you that it was this potential success of G. H. A., and not any defect or weakness in its organization, which became the real concern of the defendants, and they took action to block the operation of G. H. A. upon the theory that the success of G. H. A. and its expansion to include employees of other agencies of the Government living in the District of Columbia and in nearby Maryland and Virginia might seriously curtail the amount of private practice in the District of Columbia and thus reduce the financial return of the defendants.

You will see that one of the leaders in the activities of the Society, Dr. Mattingly, told the board of trustees on July 24, 1938, that if G. H. A. obtained its maximum enrolment it would result in the necessary exodus of a large part of the medical profession from the District of Columbia.

You will see that the defendant Woodward took the same view in an article in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, on Oct. 2, 1938, to which Mr. Lewin has already referred, and which, as you will recall, was written upon the specific authority of the board of trustees of the American Medical Association and under the direction of the defendants West and Fishbein.

After citing figures to show the proportion of the total population of Washington which G. H. A. might seek to withdraw from private practice in medicine, Dr. Woodward wrote that the effect of such withdrawal might withdraw persons able to pay for medical service and would materially disturb medical practice in the District of Columbia.

We shall also show you that this same defendant, Woodward, sought to enlist the cooperation of the Maryland and Virginia medical societies in the fight against G. H. A., principally with the argument that the personal economic interests of the doctors

in those states were at stake. He called attention to the fact that members of societies in counties immediately adjacent to the District of Columbia have an active personal interest in the matter. He urged these societies to cooperate with the local society of the District of Columbia because "certainly there is every reason why you should do so, not only from the standpoint of national interest but from the standpoint of local interest." And lest the doctors in those states should not understand the question, he warned them "against the competition with independent medical practice which will be set up by this Federal subsidy of a lay organization to buy and sell medical service to patients" in those states.

You will see from the minutes themselves which we intend to offer in evidence that the minutes are even more full of this matter of economic self-interest. You will see that on several occasions members warned that the income of doctors would be far less "if this Federal proposition goes through." Another urged the Society to take up the cudgels against G. H. A. because "we should look to the future. These plans all threaten the coming generation of physicians in their income."

You will see that the defendant McGovern urged action by the Society because he looked upon, as he put it, this organizaiton "as coming in and interfering" with his business, because he intended to be in private practice for twenty years or more and that he did not intend, if it could be avoided at all, to permit this organization to come in and interfere with his work and income.

Ladies and gentlemen of the jury, that evidence which I have just summarized will show the keystone of the conspiracy, the economic purpose of the defendants to destroy legitimate competition in the practice of medicine in the District of Columbia.

FEBRUARY 6, AFTERNOON

The proceedings were resumed at the expiration of the recess, at 1 o'clock p. m.

Opening Statement on Behalf of the Defendants by William E. Leahy

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Mr. Leahy:—When in the recitation of those facts which brought forth this prosecution I fail to preface before each statement that "the evidence will show this" or "the testimony will show that," will you kindly believe me when I say that the facts which I state will be based on evidence and testimony. The repetition of that assertion I eliminate only for the sake of not duplicating, and in the preservation of time.

. . . . . .

In order that you may know just what the Medical Society of the District of Columbia actually and truly is, how it is constituted, how it operates and what its structure is, let me briefly tell you its story.

One morning at the stated hour of 11 o'clock, in an old tavern, then called Tennison's, on Pennsylvania Avenue, in this city, near 14th Street, were sixteen men. They met to form a medical association in the District of Columbia. There were good names among those men. Some of these physicians, still bearing the same names, sit opposite you as defendants. There was a Warfield among them. Other names you will recognize—McWilliams, McMahon, Hutchinson; and back in that dim day in our nation's history they met to form a medical association of the District of Columbia, because the people of the District of Columbia were being imposed upon then by quacks and sharks.

Sixteen or 17 months later, to be exact, on the 16th day of February, 1819, this association, now a defendant in this cause, received its charter from the Congress of the United States. It was the first scientific society which the Congress of the United States ever chartered. It was twelfth on the list of medical associations which had been formed, some while our states were still colonies and others shortly after the finish of the American Revolution.

New Jersey had its medical association as early as 1766; and notwithstanding the ravages of war which had swept across the colony of Massachusetts, those medical men, those doctors of that colony, were still thoughtful enough of the public health of their people and the service which they could render them, that in 1781, even before the surrender of Cornwallis, Massachusetts had its medical society.

In 1799 Maryland formed its medical society. This Medical Society of the District of Columbia is the natural heir to that, because four of those men who sat in that group that morning were from the State of Maryland, four were from Virginia, two were from Massachusetts, three had been born and raised here in the district of Columbia. And the charter under which the Medical Society of the District of Columbia first floated bears upon its face the names of Henry Clay and James Monroe. Since 1819 the Medical Society of the District of Columbia has functioned for the good of its people and in the service of mankind.

The old charter, a bit antique in its language, nevertheless contains in one of its clauses the answer to the statement made as one which the prosecution asks you to take as gospel truth, namely, that these doctors, in this matter of G. H. A., were acting solely as economic competitors. That charter contains, as I said, the answer to it when it said in one of its provisions, back in 1819—

"Nothing in this charter shall be construed to give the Medical Society of the District of Columbia the right to control prices for the services which its members give to those who are sick."

Since that day the ethics to which every doctor in the District of Columbia has conformed have said that open competition is the life of the medical profession just as it is the most desirable element for the patient.

Now, what has the Medical Society as it exists to do with reference to the association commonly known and called the American Medical Association? Perhaps if I just briefly outline to you the general structure now of the American Medical Association you will see how this group, our own medical men, our own physicians, our own folks, fit into this scheme of the American Medical Association.

AMERICAN MEDICAL ASSOCIATION

The American Medical Association was formed almost a hundred years ago, to be exact, in 1847. It is an incorporated association, just as the Medical Society of the District of Columbia is an incorporated association. And may I join with my friends of the prosecution in saying to you that each is a purely voluntary association. No doctor on earth is compelled to join. No one coerces, forces or compels him to enter into association with his fellow doctors except his own free will and his voluntary choice. There is not a doctor in the District of Columbia who is forced to take out membership in the Medical Society of the District of Columbia. If he does, he does it because he wishes so to do, because it is only human among professional men as it is among many groups, perhaps some of you, to be associated in some organization—the Elks, or the Knights of Columbus or the Masons or what not—because you may like the association of good men; and professional men like the association of professional men.

And so this purely voluntary association is, in turn, a constituent member of the other purely voluntary association, the American Medical Association.

The American Medical Association, formed as it was back in 1847, is patterned precisely on our form of government; and if our form of government is the noblest experiment of man for the government of his fellowmen, then there can be no attack made upon the assertion that the American Medical Association is the most truly democratic voluntary association in the world today. There is no other patterned like it. It is the most perfect professional association for the advancement of the science and art of medicine which was ever conceived, because it has copied its structure after our own Federal Constitution.

And may I disabuse your minds at the outset of this covert insinuation, if not open statement, made by the prosecution, that the American Medical Association is in business. You have heard counsel say—in fact, I think both counsel said in their opening statement—that two of these officers were paid employees of the Association; they conducted the business end of the Association.

The American Medical Association is not in business. The District of Columbia Medical Association is not in business; and by no stretch of the imagination or description of human speech can either or both be denominated business corporations.

Throughout the various states of the United States, divided, as you know, into counties, we find the first of those groups which constitute the American Medical Association—the county association of doctors. They are gathered together in an independent unit, just as voluntary as any association can be. Not a single doctor in any county is compelled to join his county association. His membership is the pure voluntary choice of his own mind, his own preference and his own desire. But that group of men who wish to associate themselves together for the advancement of the art and science of medicine and its practice under ethical standards for the benefit of mankind is the unit which reaches down into your home and my home, with your physician and my physician who is going to practice medicine ethically and under honorable principles which have existed ever since old Hippocrates, 460 years before Christ, practiced medicine under the supremacy of a civilization which has never been equaled in the history of time, when Athens was in her prime.

Ever since 460 years before Christ doctors have adhered to those noble, those inspiring and those lofty ideals which have made their profession, next to those who practice the profession of God himself, the most priestly and the most God-like under heaven.

This county association is an absolutely independent unit. The American Medical Association has absolutely no control over who belongs to it, how they came to join it, how they are elected. It has nothing whatsoever to do with the affairs of it any more than our Federal Government has to do with the government of Montgomery County or of Prince George County in the State of Maryland.

In order to further carry out the similitude of this organization to our own national government, just as the counties are bound together to form states, so these county associations are bound together into a state organization, so that each state in the United States has its own state organization. The state organizations are called constituent members. The county organization is called a component member; and then these various state organizations are all bound together in the American Medical Association.

THE HOUSE OF DELEGATES

In order that the American Medical Association may have a clear, accurate, definite reflection of what the practice of medicine should and ought to be for the best interests of the people of the United States as a whole it is provided that the American Medical Association shall hold what they call a meeting of their House of Delegates at stated periods. The House of Delegates is a meeting of those doctors who have been elected by their own county associations and state associations, and they all get together just as Congress does. But instead of their being called Representatives and Senators, they are all delegates of the American Medical Association gathered together in a congress to discuss—what? The standards of the profession, the ethics of a doctor; what the profession should do for the best interests of the people!

That is the only concern of the American Medical Association. It is the only concern of the District of Columbia Medical Association.

The only difference between our own Medical Society of the District of Columbia and the Harris County, Texas, Medical Association which you have heard described is that the Harris County, Texas, Medical Association is one of these component units I spoke to you about. It is one of those local county associations. The District of Columbia, of course, not being subdivided, but in itself as an entirety, has its own association which takes care of the entire District of Columbia.

Each unit governs itself. The District Society has absolutely no control of what the Harris County Medical Society shall do; the only unity being that every man who is a member of the American Medical Association becomes a member of the American Medical Association if he joins his county association, because a county association is, in turn, a component member of the American Medical Association; and the only unity existing between the members as individual members of the American Medical Association is this, that if they desire to become members—and it depends exclusively and entirely upon their own desire—then to remain members they must conform to those standards of right practice in the public good which 110,000 doctors out of 160,000 or 170,000 doctors in the United States have fought to conform to; and if a majority is supposed to rule a profession about which you and I know nothing, about which none of us except the doctors can tell, then certainly if a thundering voice of 110,000 have spoken it ought to be, even by the prosecution, accorded the credit of at least honesty of purpose.

Now we come to the individual defendants. Perhaps I should not omit from the discussion our own Academy of Surgeons, but really it comes into the picture so little that if we said nothing about it you would not fail to understand the trend of the testimony. It is just an academy of surgeons who in turn have voluntarily grouped themselves together in order to see to it that the practice of surgery upon the public shall be governed by proper standards in the public interest.

Now we come to the individual defendants. I am not going to rename them all. You saw most of them yesterday as they stood up to be identified, when you ladies and gentlemen were being qualified to sit here as judges of the facts. They are all men who have been members of their own Medical Society of the District of Columbia and of the American Medical Association for many, many, many years. They have practiced medicine under those ethics and standards for so many years that but few of them could not be the father of most of you on this jury. Their own medical association ethics have guided the conduct of each and every one of them; and blazoned forth in the very first section of the constitution of the American Medical Association is that the standard of the practice of medicine by doctors in these United States shall be guided by the principles of rendering service to humanity, and let what you get for it be second. The constitution will be read to you, and that has never been changed.

Something was said to you in the opening statement about the standards which we call ethics, and the imputation was made, which requires an answer, that we autocratically fixed those standards, and that if one does not conform to them, then the societies, from the top down to the component county societies, seek to destroy a person who fails so to conform.

The plain answer to that was given also, but perhaps you did not get it. There are approximately 60,000 doctors in the United States who do not conform to those standards. There are 60,000 doctors against whom the American Medical Association has never moved, and those doctors did nothing contrary to the public interest.

In the District of Columbia there are 2,000 doctors. Eight hundred and twenty-five belong to the District of Columbia Medical Society. There are then approximately 1,200 doctors in the District who do not belong. I do not think that even the prosecution can produce a theft or a murder or an assault and battery committed upon one of the doctors who does not belong to the Society. It goes back to what I told you it is—a purely voluntary association of honorable men, men who have worked their lives down to the point now where the sun is sinking, in the honorable practice of a profession which they thought should never be practiced by any man or group, no matter by what high-sounding name it may be called, whether it be by way of experimentation or accomplished fact, which practices or advocates the practice of that profession in a manner contrary to the best interests of the patient and the public good.

PRINCIPLES OF MEDICAL ETHICS

The American Medical Association has had that standard of ethics ever since it was organized. The American Medical Association had little to do with the formulation of these ethics. It was done for them years and years ago, as far back as 1803 when an English physician named Thomas Percival formulated the ethics of the medical profession for the College of Surgeons in the city of Manchester, England. Those ethics were formulated on the old oath of Hippocrates, and they have come down through the ages, through civilization dead and gone, through millions of people who have tried experiments like this G. H. A., and they have always proved the only safe standard under which medical care can be adequately distributed in safety to the public and the patient.

Let us briefly advert to Group Health Association, Inc. You have heard it called in the opening statement variously as a consumer cooperative—names *you* never heard of until about 1932, perhaps. You have heard the practice of medicine described as the "distribution of medical care"; and you will find that along about 1930, and particularly after the crash of 1929, among certain members of the public who thought that by some, as they thought, new experiment they could cure the ills of all humanity, there sprang up these various new notions of social philosophy, and they tagged them with a new name. Perhaps you have heard it. They are new ideologies but these new ideologies came into clash with the ordinary method under which you and I were born and lived, and they thought that in order to cure the social evils of which this country was suffering, and the world itself was suffering, they ought to destroy the old order entirely and start all over again.

There was no indication in this experiment of the Group Health Association just what would happen after they had destroyed the practice of medicine as it had progressed in this country ever since the early days. But that was not their objective. Their objective was to impose upon the medical profession of the District of Columbia this social economic experiment, and if the medical profession, who in all this world are the only ones who can judge whether medicine is being practiced properly or not—if the medical profession did not like it, they could lump it and get indicted.

This Group Health Association was not the spontaneous outburst of these employees of H. O. L. C. in the "low income brackets." They love to use those terms—"low income brackets," poor people who cannot afford the expense of illness and who suddenly find they are suffering with an illness which sends them to bankruptcy and breaks up their homes. It did not rise in that way. The Group Health Association, Inc., was one of the most carefully conceived schemes which has ever been put into operation. It did not rise in the Home Owners Loan Corporation at all, but it had risen under the

advice, counsel, inspiration, and instruction of certain groups who again styled themselves under a catch phrase—a "foundation" or a "fund."

The background of this alleged conspiracy was just rehearsed to you this morning. In that background the prosecution was careful to omit those experiments of a similar character to this which had been tried and found wofully wanting, when either the foundation or the fund which sponsored their inception and their experimentation withdrew funds which were necessary for them to continue to exist, or they simply died "a-borning."

. . . . . .

They told you this morning that since 1890 the science or art of medicine as practiced in the United States had progressed more rapidly than in any other period of known time. Had the prosecution been fair it would have told you that those advancements in the practice of medicine were due to the efforts of the American Medical Association to prevent the destruction of that progress by the quack and the charlatan who advertised his wares in such language as Group Health Association advertises to catch the public with the phrase—

"You can budget your sickness expenses. You can pay so much a month and get adequate medical care."

And you will find that the American Medical Association has been so constantly on the alert for the advancement of the science and art of medicine that today young doctors training to become the doctors of tomorrow no longer have to go to Vienna or Germany to practice and learn, but the doctors of Germany and Vienna come to the United States. Today medicine has been brought to the highest standard ever known in the history of the world; and the prosecution says they cannot deny that statement. Medicine and its practice has been under the control, direction, advice, instruction, and careful preservation by the American Medical Association and its constituent and component societies.

COOPERATIVE LEAGUE

I told you that this scheme was not one which spontaneously burst like the inspiration of some poet or musician, so that out of the brain of some one came this unusual plan. Back in 1919 a man named Edward A. Filene established what he called a Cooperative League up in Boston. In 1922 the name of that league was changed to the Twentieth Century Fund. Edward A. Filene's perhaps closest friend was John H. Fahey, chairman of the board of the Home Owners Loan Corporation. He was so close a friend that he is executor under Mr. Filene's will. Mr. Filene died in 1937.

The Twentieth Century Fund had a department which was called the Medical Economics Department. That fund was well financed. It had back of it 150,000 shares of Filene's store, which paid $1 a year dividends. It had $500,000 in good bonds and stocks. So that when the prosecution points you to the power of the American Medical Association and the power of the various constituent and component societies thereof, I ask your attention to the testimony as to the power behind Group Health Association.

TWENTIETH CENTURY FUND

That fund was a corporation. Its name, after 1922, was the Twentieth Century Fund. It was a hundred years ahead of you and me—or thought it was. It was a twentieth century idea, away off in the future. It was engaged in the study and investigation into, and the recommendation for, various, as they said, forward-looking projects; so that the American Medical Association, which had the benefit of the experience of a hundred years, the District Medical Society which had the benefit of the knowledge, the training, the advice, the cooperation and association of its members since 1819—they were Tories, obstructionists, if they did not believe in what the Twentieth Century Fund proposed.

Now, was this Twentieth Century Fund, in the department of Medical Economics, composed of doctors who knew something about the practice of medicine? No. R. W. Rickard had charge of that. And then in the fall of 1936, to be exact, on the second and the 30th of October of that year, there seemed to have come into the Twentieth Century Fund a desire for renewed activity in the shape of its investigation into and recommendation for the practice of medicine in the United States.

There had been formed theretofore another corporation called the Health Economics Association. So the Twentieth Century Fund revamped the charter of that corporation and put Mr. Rickard in charge of Health Economics Association, Inc., as its executive vice president.

Then, at the same time, they organized another corporation and gave it another fancy name, calling it the Good Will Fund.

HEALTH ECONOMICS ASSOCIATION AND GOOD WILL FUND

Health Economics Association, Inc., and the Good Will Fund are godfather and godmother to Group Health Association, Inc., that we have been talking about, because in October Mr. Penniman, the name that you have heard mentioned heretofore, made what he thought was a brilliant and a sudden discovery hitherto unknown to mankind. He had come from outside the District of Columbia and was director of personnel with the Home Owners Loan Corporation—and it almost makes us here in Washington smile—because he suddenly discovered that Government clerks take sick leave. So he started to figure out what sick leave cost the Home Owners Loan Corporation. That is what he said. And he went before the board of the Home Owners Loan Corporation with the remarkable discovery that sick leave was taken by Government clerks. He figured out as to how much it would cost the Home Owners Loan Corporation on account of this sick leave. Sometimes the statement was made that it was $100,000 a year, and sometimes it jumped up to $500,000. It should have developed into a hospital instead of an organization! But at all events he went to the board and asked the approval of the board for the organization of some group in Home Owners Loan Corporation in order that the members and employees of Home Owners Loan Corporation might be guaranteed good health by some kind of a plan under which, by payment of so much a month, they would get everything they needed in the shape of medical care.

Then, too, he found that as in all government departments there was an excellent thing, an emergency room. You find them in almost every office in the District of Columbia of any size, for the purpose of taking care of an employee who becomes ill on the job. If he needs emergency care there is a place where the employee needing that care may be taken.

So he also represented to the board that that business of taking care of the emergency room, and the nursing staff, and what not, in Home Owners Loan Corporation could all be swallowed up in this new theory—the Group Health Association. It is no more new than dozens of others which had fallen by the wayside, because economically, as the testimony will show, it is unsound; it cannot give adequate medical care; it interposes between the patient and the doctor the direction of a lay body who know nothing about the practice of medicine and will only hinder and throttle any doctor who is attempting to take care of his patients. It interferes with the free choice of physicians. You can see that, because the members take what is provided for them, to wit, the doctors on the staff.

At that time Penniman reported that he had studied somewhat and had sought the advice and counsel of someone of those who had given attention to this kind or sort of group, the "herd" practice of medicine. And of course it was the Twentieth Century Fund. They had been dabbling in theories for years. Rickard, a paid employee, had been heading up the department under Group Health and was now the executive secretary of Health Economics, and he gave for the benefit of the employees, as he thought, his knowledge and his experience.

Now, on the point of cooperation the testimony of the defense will be directly to the contrary, and will prove every word of what I say.

It is only fair to assume that if someone is going to organize a group of employees in order to obtain for those employees adequate medical care, so that an employee in case of illness shall receive proper treatment—it is only fair to assume that someone ought to be called into consultation who knows something about how to provide adequate medical care.

GROUP HEALTH ASSOCIATION, INC.

This concept of Group Health Association, starting as it did in October of 1936, never had room for one word of consultation, advice or instruction from a single medical doctor in the District of Columbia. This is the association that the prosecution said this Group Health Association desired to cooperate with; and the testimony will show that the Medical Association of the District of Columbia never heard of Group Health Association until the coming of an event which I will tell you about later. Group Health Association never asked any single doctor in the District Medical Society whether it was wise or unwise, efficient or inefficient, ethical or unethical, medically sound or unsound.

The trouble with G. H. A., as I will show you when we come to the analysis of its whole structure, is that these men who headed it up were economic theorists. You can't sell medical service as you sell baked beans or a package of cigarets over a counter. The practice of medicine has in it that intimate relationship between the patient and the doctor, the absolute confidence of the patient in his doctor, so that when the doctor comes in to make a diagnosis of the patient's illness, the patient

unhesitatingly gives to the doctor full and complete and most confidential information, knowing that it will never be disclosed, but upon which the doctor must act in arriving at an accurate diagnosis.

Therefore the body which now they say they wished to have assist them, the Medical Association of the District of Columbia, the testimony will show was never consulted in one single particular with reference to the formation of Group Health Association. The fact of the matter is—and is not this strange—the fact of the matter is that after they had been working on this thing for about two months they got out a beautiful little brochure which was all decorated up with pictures of pretty nurses, and the doctor standing over the patient at the bedside, and on the outside it said, "For confidential information. Not to be distributed to the public."

This is the organization that wanted to cooperate with the doctors.

The man whom Rickard got to assist was a doctor in Chicago who has been advertising in newspapers who headed up an organization that the Supreme Court of Illinois declared to be illegal and told him to quit doing it. That is Brochure No. 1. I don't think Group Health knows we got it, but we got it.

They were by this time working along so that they had this organization pretty well planned out on paper. Not one of us knew anything about it. The American Medical Association, the Harris County Medical Association, the College of Surgeons, the district Medical Society—they did not know anything more about this than you did before you heard about it yesterday and today.

They had this Army officer who, the prosecution told you, had agreed to head up this Group Health Association as its medical director and whom, he said, we persuaded to refuse to become medical director. Penniman, Zimmerman and others were down here for months keeping away from the Medical Association any knowledge whatsoever that they were going to spring this organization whose purpose and objective was aimed straight at the heart of the practice of medicine as it had been known for over a hundred years in this country.

We did not have a thing to do with either General Ireland's or Colonel Jones's refusal to take the job as Medical Director of that organization. How could we? We did not even know it existed. We did not even know it was in contemplation. Somebody must be mistaken, because the evidence which we have as to why General Ireland did not become Medical Director of that association is that he asked the Colonel to make a careful investigation of what sort of an association this was. Others had been trying this all over the United States. This was not new, this notion of group health. The report came back that it was an entering wedge into State-controlled medicine, and he said, "We dropped it like a hot potato."

That is why they did not get General Ireland or the Colonel as Medical Director.

BROCHURE NO. 2

When did we first learn about this association? Brochure No. 2 was distributed. It was a bit of a supplement and a correction and re-edition of Brochure No. 1. We did not get the pretty picture in No. 2; but some one in one of the Government departments handed that to Dr. Verbrycke, and he was on one of the committees of the District of Columbia Medical Society, and there was found outright a scheme under which not merely the employees of H. O. L. C., but all of the employees of all of the Government departments in the District of Columbia were to be grouped together under this plan.

It is needless for the prosecution to read any statement made by Dr. McGovern or Dr. Macatee or any of the others, because as men and women of Washington we know that when you take out of the District of Columbia practically all of the Government employees, then you have about half the population, when you take their dependents. But here, suddenly and unknown to the Medical Society, was this scheme which had been ripened to the point of fruition, so that already it had been carefully blueprinted and the way all set to go.

The District Medical Society was not concerned about that. It was concerned about one statement which, in substance, was this:

"After the plan is ready to launch, then let us try to get the cooperation of the District Medical Society."

In other words, wait until we are ready to go; wait until we are all prepared, and then let us spring it on the Medical Society. If they will come along—fine! If they won't, they are going to take it anyway.

Group Health did not cooperate. When the Medical Society read that in their brochure they sat down and wrote a letter to Group Health and said:

"We notice that you want to cooperate. Won't you come and tell us what the scheme is in which you desire cooperation?" So Mr. Penniman, Mr. Zimmerman, Dr. Brown, a very estimable old gentleman who had been in charge of hospitals under the Veterans Bureau in the United States Government and who had become persuaded by the allurement of this Group Health Association, until his mind was disabused and he resigned a year later when he found it could not work—they all appeared at the District Medical Society. Up to that time the District Medical Society had never met—and when I say "Society," I mean the responsible members of its committee—had never met a single human being connected with Group Health Association. They had never been invited by anyone connected with Group Health Association to learn what it was all about, what they expected to do or how they expected to do it.

That was sometime in June, and it followed the meeting which the prosecution called your attention to this morning, of June 1, 1937.

And now I ask you to stop with me just a moment in order that I may disabuse your minds of the theory upon which the prosecution proceeds with reference to dates antedating June 1.

You were advised in the opening statement of the prosecution that this conspiracy began on January 1, 1937, and existed down to the finding date of the indictment, which was December 20, 1938. Why they fasten on January 1, 1937, no one knows except the one who drafted the indictment.

The fact about the matter is that the District Medical Society never knew Group Health was in the convolutions of the brain of Mr. Rickard or Mr. Penniman on January 1, 1937. Therefore when Group Health Association had filed its charter on February 24, 1937, the District Medical Society was no more concerned with Group Health than you and I are concerned now with something we know nothing about.

But the prosecution was careful to call attention to a resolution which had been adopted by the District Medical Society, counsel says, within an exceedingly short time after the charter of the Group Health Association had been filed over here across the street in the office of the Recorder of Deeds; the inference being that the resolution was adopted because the charter had just been filed.

In order, therefore, to answer that imputation and inference and to show the positive lack of any basis in fact for drawing it, let me tell you this about this section. You will probably hear quite a bit about it. The prosecution read certain portions of it to you. It is that Section 5 and prescribes that the members of the District Medical Society should not have professional relations with those who were engaged in the practice of their profession under contracts which had not yet been approved by the District Medical Society.

That resolution had absolutely nothing to do with G. H. A. The first reason, and one wholly sufficient, is because the District Medical Society itself did not know anything about Group Health when it adopted that resolution. I think the prosecution was fair enough to state, and in so stating hoped that its statement would take your mind away from the purpose of the statement, that it was another clinic toward which that particular resolution was aimed. It was. They knew it was aimed at an entirely different clinic. They knew that G. H. A. had not been even organized yet. It was aimed at a clinic which was practicing medicine unethically and which the District Medical Society thought ought not to be permitted to operate against the public interest.

The District Medical Society did not act arbitrarily. It did not simply reach up to high heaven and grasp this mighty power which it possesses and smother this clinic. Before they moved in regard to that resolution they sought the advice of two of the most eminent members of the bar of this court, two Nestors of the profession, Mr. H. Winship Wheatley being one, and the other was one of the best known members of the bar who will come to testify; and I am going to keep him for a little surprise.

Those two lawyers went over the situation which confronted the practice of medicine in the District of Columbia from the standpoint of ethics and more particularly with reference to this particular clinic, and they advised the Medical Society of the District of Columbia that what they should do was to adopt a resolution which would be applicable to every kind of clinic which sought to set itself up contrary to the public interest and prey upon the public under the guise of practicing medicine.

That resolution was adopted then.

But to give this trumped-up conspiracy notion, that the District Medical Society passed that resolution against G. H. A., they point to the deposit of the charter on February 24, and they say that early in March we passed this resolution. I presume the sun should have stood still because Group Health was organized.

The second piece of evidence which I wish to draw to your attention and of which a great point was made by the prosecution. You will recall that a great deal was said about the tremendous power which the American Medical Association had gained unto itself, and also the District Medical Association in the District of Columbia, and it was this tyrannical abuse of this wonderous power which they had attained that crashed down upon G. H. A.; and they pointed out as one of the evidences of the misuse or abuse of that power the relationship between the hospitals and the American Medical Association and the District of Columbia Medical Association, and the use of that relation in the deprivation of the right to practice either on the regular staff or the courtesy staff of the hospitals in the District of Columbia.

While I am on that point, let me briefly explain to you just what the relationship of the American Medical Association and its constituent and component association is with reference to hospitals.

RELATIONSHIP OF A. M. A. TO COUNTY SOCIETIES

As the prosecution stated to you, medicine today is at the highest peak of excellence, of purity and of honesty that the world has ever known. One of the essential adjuncts of the practice of medicine, one of the necessary implements today, is the hospital. The hospital could not continue to exist without the doctor, and it is supremely difficult for the doctor to exist without the hospital. But each hospital is separately owned, independently managed by its lay group or lay board of directors.

Hospitals maintain two staffs, the general and the courtesy. The general staff is composed of those doctors who are elected to the position by the board of directors of each hospital. The general staff is subject to the call of the hospital, so that if at 12 o'clock tonight an accident occurs and some special treatment is required by someone who has been injured, the hospital calls a member of that staff who has special experience for the proper care of the injury which that patient has sustained, and that doctor goes, day or night. There is no 5 o'clock limit on him. Day or night he goes, and if that man cannot pay, he gets the service nevertheless without pay, because those men are on the staff, that general staff of the hospital, for that purpose.

On the courtesy staff we have those doctors who are permitted the courtesy of coming into that hospital to treat their patients. Therefore there is a unity of interest between the profession and the hospital in this: to keep the standards of the hospital to the very highest peak, and therefore the American Medical Association has watched carefully the hospitals of the United States. They have examined them. Why? Because of any economic reason? The prosecution cannot produce one iota of evidence that the American Medical Association in the inspection of a hospital ever had any economic purpose in mind whatsoever. We never heard about this "economic" matter until about 1932. The American Medical Association has built up the standard of care which the patient receives in the hospitals of the United States to the highest point in the history of the world. And how is it done? By inspection and seeing to it that the patient is properly cared for, that the intern is properly trained, that the resident has a proper opportunity to receive instruction under the tutelage and guidance of the members of the general staff. Those men teach the young intern today because they know that the young intern of today will be taking their places tomorrow; and the sole and only interest of these men who serve without pay on those staffs in instructing those interns and residents is to maintain the high standard of medicine.

And this testimony will speak for itself in resentment against the imputation that it was a dollar bill in the pocket or an economic competitive reason which impelled them.

Is not the general public of the United States interested to know just what the consensus of the opinion of all the doctors of the United States is with reference to a hospital?

The testimony, therefore, will be directed for your instruction to this point against the attacks made by the prosecution upon it—that the American Medical Association has given to a hospital which measures up to the standards which due and proper care in the public interest require a grade by stating publicly in its Journal that this hospital has received a grade which entitles it, first, to conduct itself as a hospital, and then to train the young men of today to be the doctors and surgeons of tomorrow; and the public can rely upon that standard.

That was not done in order to grasp or attain power. It was done in the whole-hearted, sincere, honest, sacrificing purpose upon the part of the medical profession to see to it that you and I, if we go to a hospital, shall receive the proper care which we deserve.

I had almost forgotten this. In 1935, long before even Mr. Penniman made the sudden and inspirational discovery that H. O. L. C. had some of its employees sometimes ill—and I believe the prosecution stated that Mr. Penniman discovered that because he was looking over the loans which had been made at the Credit Union, and the Twentieth Century Fund was interested in the Credit Union—away back of that there comes into the picture the Twentieth Century Fund and the Health Economics Association and the Good Will Fund.

But to return to 1935. At the meeting of the House of Delegates in Cleveland in that year the House of Delegates passed a resolution which was to the effect that they thought it in the public interest if the members of the staffs of hospitals throughout the country should be members of the American Medical Association.

That was not adopted by the House of Delegates except as a subject of the advice and consideration of the Council of the American Medical Association. In other words, the House of Delegates said, in substance, to the Council, "Here is what we were thinking about. Think it over; look into it. See what there is to it."

That was in 1935. Surely that could not have been adopted in 1935 with any view of G. H. A.

What was behind that? The purpose behind the resolution was this, that if the members of the staffs of hospitals belong to the American Medical Association, and if any member of any one of those staffs did not live up to the proper standards of their own conduct or in the practice of their profession, if they were not alert to see that proper care was used, then the hospital would have not only its own method to throw off the list such a person who was out of step, but the American Medical Association itself would say, "Here, as a member of our association, conform to these standards, or we will recommend to this hospital that you cannot belong to its staff."

It was a method which the American Medical Association had adopted in order to keep the standard of care where it should be.

Now, let us return to June 1st. That is where we were some minutes ago—the Group Health Association in its relations with the District Medical Society.

Brown, Penniman and Zimmerman came to the District Medical Society in response to the request which was made, and there they met the executive committee. The executive committee is composed in great part, and was then, of some of these defendants. I do not think it will be necessary for us to put on any reputation testimony for them. They have lived lives of honor. They have lived sacrificing lives, and they have won a high position in the community. Perhaps never before in the history of this country have you seen men of their prominence haled before a court of justice as defendants.

Those men met, Drs. Brown, Zimmerman and Penniman; and they said "In this brochure you state you want our cooperation. Won't you tell us, please, what kind of a scheme this is?"

They had examined it, they looked over its structure, and they found that on paper the thing was economically unsound; that it was not going to be operated in accordance with the public interest.

So they asked "How are you going to operate this? You claim you are going to have a clinic, you claim you are going to have a medical staff, you claim you are going to give all these medical services to all these people in the District of Columbia. Under your set-up you take care of a hundred thousand people. It takes money to take care of a hundred thousand people. It takes money to get x-ray machines, to equip a clinic, to employ nurses. Where is the money coming from? We will cooperate if we know that the thing is economically sound, that it is ethically conducted, and in accordance with the public interest, but, tell us something of your scheme."

Is that unreasonable?

They were told "It is none of your business. It is none of your business where our money is coming from and we won't tell you."

And the meeting broke up.

Then, Dr. McGovern some time later wrote again to Mr. Penniman, I believe it was, and said, "Won't you give us a copy of your contract? Won't you give us a copy of your by-laws under which you lay down and prescribe the services you are going to render? Won't you tell us something about yourself, so that if you want us to cooperate we can do so intelligently?"

The distinction between the two groups in this case, the District Medical Society and Group Health is this:

Group Health always made evidence for itself.

The District Medical Society never hesitated at any time to disclose every purpose and reason which motivated or actuated its conduct.

Penniman would not write, would not answer. He called on the telephone.

And Dr. McGovern met him down in the Raleigh Hotel, thinking the two of them were going to sit down as you and I would, sit down at the table and discuss it.

When he got there Penniman had a witness, Zimmerman, and he said, "Tell us where you are going to get your money. Tell us how you are going to operate this group."

He said "It is no more of your business to ask us how we are going to get our money than for you to go up there and ask Mr. Garfinckel what his agreement is with the express company."

Wasn't it?

Now, this is the cooperation which the prosecution told you this morning and yesterday this Group Health wanted from the Medical Society.

Now, at just about this time there was brought to your attention the white-list. Perhaps you heard the words. You have them now.

And they said that about this time the American Medical Society in further pursuance of this terrible conspiracy had gotten together in their committee meetings, they had formulated a white-list, they had circulated it to its members, and even circulated it to the hospitals.

Now, let me explain the white-list—or, once again, they complain because Group Health Association was not on the white list.

How could it be? They didn't open up for three months. They were not in existence. How could it be on the list?

And yet they draw that to your attention as part and parcel of this conspiracy.

Now, what was this white-list?

I tell you that that resolution section 5 was aimed at another clinic.

The prosecution named half of it, the Crawford's.

It was the Pennhallow-Crawford's Clinic.

That was declared to be operating not in the public interest, and therefore the District Medical Society had told its members this, and it is just and reasonable: "How can we permit a member of our Society to deal with a man who we say is not practicing medicine ethically or in accordance with the public interest? If we allow our members to deal with that man, then later on when the public finds out that this has been done not in accordance with the public interest, then they will say 'Why did you let your members join? What kind of an association are you? You approved the association because you let your members deal with them.'"

So the Medical Association then said "Before anyone of us deals with anybody under a contract where he is selling his services under a particular contract, let us see what kind of a contract that is. See whether or not he can perform those services. See whether he actually is giving proper medical care. Or, is he just hoodwinking the public under the contract?

"If the contract is sound we will approve it. It it isn't sound we won't approve it."

And there are eight or ten groups in the City of Washington practicing medicine in accordance with the ethics of the District Medical Society, and not one of them disapproved. Right now.

And every single group in the District of Columbia that was practicing under what they call contract practice on the date the white-list was formulated is on the white-list.

Now, why do they call it a white-list?

The District Medical Society sent it to its members and said "Each and every one of these clinics now operating in the District of Columbia is approved by us."

There were no others in the District of Columbia operating.

The prosecution says "But they didn't put G. H. A.'s name on there."

Well, how could they when it didn't open until November 1st. And this was early in July.

Now, then, later in July after this meeting with Dr. McGovern when they could get no information whatsoever from this cooperative group who were cooperating so magnificently, they met again down in the headquarters of Group Health Association; the District Medical Society trying to cooperate.

They went down there again and said "Will you give us some information as to how you are going to operate?"

No. Won't tell you.

How could we cooperate when they wouldn't tell us how they were going to operate?

And every doctor in that group, every doctor in the Medical Association of the District of Columbia, and every doctor in the United States of America knew that if that group were going to operate under the plan which they put out at that time, which was in 1937, it required money.

Every one of them knew that these dues which they brought up could not support the group. And what they wanted to prevent was this:

The solicitation of government employees under the promise that they were going to get adequate medical care, when those who were doing the soliciting knew that they could not provide the adequate medical care because they didn't have the funds.

Now, just at that time, just along while this was brewing and the pot was boiling, as I am telling you about now, this group came to the president of the District Medical Society, Dr. Neill.

He sits over there as defendant now. He could have had the job of Medical Director. He didn't take it. There he is (indicating).

Dr. Neill said to Mr. Childress—and Mr. Childress was the right-hand man of John H. Fahey, and a very close friend of Dr. Neill, who had operated on his family—"There is a new group being organized down here in H. O. L. C., and would you like to take the job as Medical Director?"

And Dr. Neill's answer was this:

"You are the judge whether this is fair. If it is economically sound, if it is legal, and if it is ethical, it is the job I am looking for."

But he never could find out anything about it.

And so later on they got Dr. Brown.

Now, the point is this: In reply to what was stated by the prosecution, the District Medical Society didn't ask Group Health Association, Group Health Association kept its organization secret and confidential until it had become entirely and completely formed and ready for action.

And then it assumed a haughty, arrogant attitude that "We are going to put this thing across whether you like it or not," and they assaulted and attacked the District Medical Society, first, by taking its president, if they could get him; next, by taking their second one of its members, Dr. Lee, another one of its members.

And, if this thing is so good, why did they have to come into the American Medical Association which had been moving along since 1819 without trouble from anybody, and start in to disrupt its membership, when there are 69,000 doctors in the United States from which they could draw, and there were 1,200 in the District of Columbia from whom they could draw.

The point is, and the testimony will show, that just as General Ireland stated, it was an entering wedge with the stage, as Mr. Kelleher has said this morning, national in scope, to destroy, disrupt, confuse, and then rebuild the practice of medicine, according to the ideas of these theorists.

I believe I was just discussing with you before the short recess the meeting which has been held at the headquarters of Group Health in connection with the projected cooperation between the two organizations to procure the end and purpose of what Group Health desires.

Suffice it to say that the conclusion of that meeting was simply this:

The refusal on the part of Group Health to disclose anything of its financial capacity or ability to function, and the statement by one member of the board of trustees for Group Health that it was very evident that the two could not get along, and they were going along, meaning Group Health, at all events, and if the District Medical Society desired to withhold its judgment with reference to what Group Health was doing, kindly do so until the District Medical Society saw what Group Health could do.

That was in the summer of 1937.

And at that time, with the knowledge on the part of any doctor, whether he were a member of the District Medical Society or not, that no organization like Group Health could possibly proceed to success without some financing of some character sufficient to warrant the character and type of service indicated in the brochure, the District Medical Society from then on had but one intention, and one purpose, in view, to see what the operation of Group Health was with respect to its functioning in the public interest.

Group Health refused to submit its contract to the Medical Society.

It demanded its cooperation without giving to the Medical Society any information whatsoever.

Then, subsequently, the reason for the refusal became apparent.

THE $40,000 APPROPRIATION

The representations which I spoke to you about earlier, which Mr. Penniman gave to the board of H. O. L. C. with reference to the cost to that organization growing out of sick leave taken by its employees was made the basis for the appropriation from public monies of $40,000.

I think that sum was mentioned or described as the paltry sum of $40,000, by the prosecution; to guarantee the beginning only of Group Health Association.

In order to conceal the purpose of the misappropriation, Group Health in March had entered into a contract with H. O. L. C. under which it agreed to give medical and hospital services to the employees of H. O. L. C. for a period of two years, for $20,000 a year.

Then, Group Health found itself in a financial situation where it couldn't finance the equipment for the clinic, just as Dr. McGovern had in his mind when he asked the question, "Where are you getting this money?"

And instead of paying this amount of money over two years in accordance with the contract, within six months every dollar of it had been paid to Group Health, in order to equip its clinic.

John H. Fahey, who was then a high officer in Health Economics Association, who was still a higher officer in the Twentieth Century Fund, was chairman of the board.

But never would Group Health Association disclose the fact that this misappropriation of public funds had been made in order to guarantee merely its beginning.

One step further, they utilized the facilities of Home Owners Loan Corporation to purchase equipment at government prices, a privilege which no organization has the right to exercise except the Government, and bought practically at cost the equipment which went into H. O. L. C.

Lawyers of H. O. L. C. were utilized to carefully instruct, formulate and supervise the structure and conduct of Group Health Association.

I say this in reply to the statement made by the prosecution that we might say that Group Health Association was connected with the Government in some way, but that in fact Group Health was an independent corporation entirely distinct from any governmental activity.

Why, the trustees of the Twentieth Century Fund had on their board four of the highest government officials we have today when this $40,000 misappropriation went through.

John H. Fahey, was chairman of the board of H. O. L. C.

The Solicitor General of the United States was on the board of the Twentieth Century Fund.

The Attorney General of the United States was on the board of the Twentieth Century Fund.

And one of the highest state officials was on the board of the Twentieth Century Fund.

We say that for you to judge whether this was a government attempt to destroy the Medical Society of the District of Columbia and the practice of medicine as it had been known for over a hundred years.

Now, then, that misappropriation came under the watchful eye of Congress, and also the Comptroller General of the United States, and, you will recall, counsel for the prosecution justified or attempted to, that $40,000 transaction by saying that the Home Owners Loan Corporation was authorized to determine the character of its expenditures, regardless of any other law of the United States, and therefore, since that provision was contained within either an appropriation act or some other act of Congress, it had the right to take $40,000 and start a grocery store or a meat market if it so chose.

When the chief counsel for H. O. L. C. was before the subcommittee of appropriations of the House on the 18th day of December, 1938, and Mr. Woodrum asked him the question: "On what justification did you take these $40,000?" He made the same answer counsel for the prosecution made to you, and Mr. Woodrum said "That is the first time since I have sat on the Committee of Appropriations in any Congress of the United States that I have heard a public official ever advance that sort of a reason for the misappropriation." And then added "It is the unanimous opinion of this committee the appropriation is illegal, and, hereafter, it shall not occur unless specifically authorized."

And when the matter was brought before the Comptroller General of the United States he answered the contention as made by counsel for the prosecution and supplied to Senator McKellar—or, perhaps it was to Pat McCarran—I believe it was,—he enclosed the documents which backed up the statement as made by the prosecution, and the Comptroller General said that from everything he had reviewed—and he had everything that was then in existence—that misappropriation was entirely illegal and contrary to the laws of the United States.

Now, counsel for the prosecution said this morning to you in his statement that he was going to prove to you that doctors don't care about the violation of the laws of the United States, they were just making this opposition on pure competitive reasons.

How much then from this testimony does it show G. H. A. cared about the law of the United States?

It was precisely, as the testimony will show, a determination to put this over legally or illegally.

Why do I say that?

In the 1936 annual report of the Twentieth Century Foundation or Fund, you heard about Rockefeller Foundation, and you have heard of another foundation this morning, but this is called fund.

They gave a report of what their activities in establishing groups and prepayment plans throughout the United States had been. And they made this significant statement in that report:

"In substance, we cannot establish this group practice in many of the states because it is forbidden by law, and therefore we have applied to the legislative bureau of Columbia University to find how we can get around the law."

And when Group Health first started it put out early in 1937 a series of by-laws or regulations, and as late as November 6, 1937, when the general counsel of Group Health Association was submitting to the board of the H. O. L. C., amendments to those by-laws for the approval of that board, he said the reason he was making the amendment was to improve the legal position of the Association. And that if they should be held to be an insurance company, then he thought the legal position of the company—of the association, was strengthened by this amendment.

That was in November 1937.

Now, much water had gone over the dam since they had refused to disclose to the District Medical Society anything at all about themselves, since they had refused to tell about the $40,000, and at that time a fact which we for the defense were astounded and astonished the prosecution did not bring to your attention, the two chief prosecuting officers who represent the enforcement of the law in the District of Columbia, were investigating the legality of Group Health Association.

And at that time, in November, the District Medical Society had employed counsel to give them advice as to whether Group Health Association was legally doing business or not.

This we offer on the question as to whether the Medical Association of the District of Columbia was regardful of the laws of the United States and their own conduct with respect thereto, throughout this entire controversy.

At that time, therefore, when Group Health knew that its conduct was under the investigation of the Corporation Counsel of the District of Columbia, and the United States Attorney of the District of Columbia, whose office is right here in this building, it commenced a course of conduct which it never finished until May 2, 1938, and this is what counsel for the prosecution did not disclose to you.

Just as the Medical Society of the District had employed counsel to advise them with reference to Section 5, they employed counsel with reference to the general legal structure and method of doing business of G. H. A., in order that they might be advised as to whether they could cooperate, as to whether it was a legal institution or not, or as one which they had a right to protect themselves against assault made by it.

The reason why they employed counsel grew out of a conference which was had on the 2d day of November, 1937, in the city of Chicago.

At that time the District Medical Society sought the advice of older and wiser and more experienced heads and those who were in information nationally with reference to the practice of medicine in this country.

They went to Chicago and asked these terrible men, Dr. Woodward—I don't guess there is anyone on the jury old enough perhaps to remember when he was in charge of the Public Health Service of our own District of Columbia, but I had the honor of sitting under him when I was taking my law and post-graduate in Georgetown. He was then here in the District of Columbia. This man now sitting as the defendant. They asked Dr. West what he would do in this situation in the District of Columbia.

The sum total of that advice by these conspirators was "Go back home and employ legal counsel who can make an investigation of the organization and see what it is all about."

They came back home.

Counsel advised them that the Group Health Association was practicing medicine in violation of the healing and practice act in the District of Columbia.

Counsel also advised them that it was conducting an insurance plan without having obtained a license from the Insurance Commissioner of the District of Columbia.

With that advice the District Medical Society then presented briefs of counsel to the Corporation Counsel in the District of Columbia and to the United States Attorney.

And in December of that year the United States Attorney for the District of Columbia told Group Health that if it didn't stop doing business, he would stop it, that it was violating the law.

And the Insurance Commissioner of the District of Columbia told them that if they didn't stop, that he would stop them, and that they should take out a license as an insurance company.

That was in December.

Counsel then this morning pointed your attention to the exemplary conduct of Group Health Association, by coming into this court of its own free will and petitioning this court for advice as to its legal status.

Group Health Association, as this testimony will show, never came into this court until the United States Attorney and the Corporation Counsel drove it in.

And then they came in here on January 15th, and they set up under the corporate oath that the United States Attorney and the Insurance Commissioner of the District of Columbia had threatened to close them up and they wanted this Court to determine whether they could continue to do business or not.

And then the prosecution tells you this morning that Justice Bailey in the latter part of July, on the 27th, declared they were legally in business, and he gave his blessing to the transaction; and he never told you what happened.

Just as soon as they filed their petition in January, Group Health commenced new amendments.

They amended their charter again, that month; then they amended their by-laws again, on the second day of May, right while this petition was right in this courthouse, just before it was argued in June.

They took every single objection which counsel had placed before the United States Attorney and the Insurance Commissioner of the United States, and they changed their by-laws to meet those objections.

So that the Group Health which Justice Bailey determined was legally operating was no more like the Group Health which had been fighting the District Medical Society than the wolf is like Red Riding Hood.

That is the organization Justice Bailey passed upon.

And then, within four days, Thurman Arnold announced: "Now, we are going to indict every last one of you."

No opportunity given then for the District Medical Society to determine its attitude; showing that from the beginning—and I will bring you a few more instances which, the testimony will show, that this is not an arbitrary statement or a reckless one made,—from the very beginning Group Health was determined to go forward with this experiment against any opposition, by any means legal or illegal, and that it had behind it the prosecuting office of the Attorney General who was going to add its authority.

Thurman Arnold did, in this case, by public announcement within four days after Justice Bailey's decision.

The Corporation Counsel took up the question of the practice of insurance to the Court of Appeals.

Did Mr. Arnold take this end of it up? Oh, no.

The Court of Appeals has declared whether or not G. H. A. is now legally practicing is an open question in the District of Columbia.

Now, then, I told you that from the beginning Group Health was building evidence so that it might through the prosecuting officer stand before you and make just the statements that were made.

I told you that when Dr. McGovern way back in July met Mr. Penniman for what he thought to be a friendly chat over the luncheon table in the Raleigh Hotel, Mr. Penniman took a witness along.

When they went down the following month to the headquarters of Group Health Association to have their conference there were stenographers there taking everything down stenographically.

And then when you hear these incidents which are brought to your mind, I want you to get all the facts about it, so that when the testimony comes along you will understand.

You will recall that the prosecution stated that the means by which we proceeded to attack Group Health Association fell into three categories, and he classified them first, with reference to attacks made upon Group Health in order to prevent its getting doctors on its staff, or, if it got doctors on its staff, retaining them thereon; secondly, with reference to the right of a doctor to consult; and third, with reference to the hospitalization of patients of Group Health.

Now, let this be understood now, the District Medical Society never objected to a patient of Group Health being treated in any hospital in the District of Columbia at any time for any disease or purpose.

The hospital objected only under certain circumstances, which I will detail to you in just a moment.

Group Health insisted not that the patient be entered in the hospital, but that its doctor also treat that patient in the hospital.

THE CASE OF THE TECHNICIAN WITH HEMORRHAGE

Now, you will recall that one instance which was brought to your attention was with reference to a young lady who was described to you as a technician within the clinic of Group Health Association, and who suffered a severe internal hemorrhage, and she fell swooning on the floor; and I thought that perhaps she would die before he got through telling us about it.

And then, the surgeon wasn't permitted to operate until he went through a long series of questions and investigation about his right to operate on her.

And you will recall, coming as a surprise, I asked if that was Miss Tew, and he said no, that was Miss Stuart. He was coming to Miss Tew later.

Miss Stuart never had an internal hemorrhage any more than you or I had.

She went to Garfield Hospital; she was operated on at Garfield Hospital by Dr. Schoenfeld.

She arrived in Garfield Hospital about ten o'clock. Her room had been assigned; she was prepared for the operation; she was operated on at 12 o'clock. There was no internal hemorrhage and if that is denied and she waives the privilege Dr. Schoenfeld will come in here and tell you that. The next instance was Miss Tew, and this we offer for the purpose of bringing to your attention the attitude of Group Health Association.

Just as I told you earlier, Group Health Association never sought the advice of a single doctor of the District Medical Society with reference to its formation, the character of its services, the cost of its services, whether it could be rendered or not for the benefit of the patient. Neither did it ever seek or make request of a single hospital for admission to privilege of a single doctor of H. O. L. C. until as the prosecutor said, "After we were ready to be launched."

They knew just as well as you and I do that the lights are burning here in the ceiling that before any doctor in this District of Columbia or any place else has the right to go into a hospital in order to treat a patient he must get the permission of the hospital; that is a reasonable provision, for this reason: No hospital could, in the public interest, or in the patient's interest, conduct itself by permitting every sort of a doctor,—one who has violated every standard of good practice—to come into its hospital. It could not possibly exist without the protective regulation known to every hospital throughout the United States, and I don't think I am exaggerating when I say the word; that a doctor is privileged but he has no right to practice. That question has been determined by this Court. He has that privilege; he has no right to it.

Then Dr. Selders, of whom you have heard quite a bit, didn't ask for the privilege; not a single member of the staff asked for the privilege, but this chap Penniman, the supervisor of personnel, a layman with no more knowledge of medicine than any one of us has here; Penniman, a layman, arrogantly rushed to the hospital and told them he wanted the privilege for his entire staff.

Now, it is customary for hospitals to make investigations into the character and the experience and ability of doctors who make application to practice in hospitals—a reasonable thing. The doctors made a reasonable investigation, or, rather the hospital made an investigation into Dr. Selders and, just again to show you how information is given to you, the prosecution says, "There was a man 45 years of age," and I know you thought—because I could see it in your eyes—there is a man who has been practicing his profession for 15 or 20 years—and the hospital denied him privileges.

The ink wasn't dry on the right of Dr. Selders to practice surgery when he joined the G. H. A. He just had come out of the Worcester General Hospital at Worcester, Massachusetts. All the operating he had ever done was under the supervision and direction of the staff of the Worcester Hospital; and he came down here and made an application to the hospitals of Washington to perform every kind of an operation except brain surgery. And, "We say the man should have been accorded that right because it is G. H. A.; and being employed by G. H. A. he had the right to do just that. We can take $40,000 of public moneys; we can use it anyway we want; we can violate the law if we want to, because we are G. H. A."

Those doctors gave him a very careful examination, as they do every doctor, and they didn't think a man who had just come out as an intern of a hospital should have the right to

practice surgery of all kinds in the City of Washington, in its District hospitals.

Now I hope they won't try to tell us more about Dr. Selders. He resigned in 1938 from G. H. A.; Dr. Brown resigned just before that. I am not going into that at least at this time.

Now, then Dr. Selders. when this blank application was made by Penniman, had been given the customary privileges by the Garfield Hospital which were allowed to any doctor upon the assumption that having been licensed to practice in the District of Columbia, pending this period of investigation he could have certain limited privileges; those which did not involve operations so serious as to endanger human life. Those privileges expired. Dr. Selders knew they had expired; Columbia Hospital wrote him a letter and told him that the privileges had expired under the terms of the original grant, and that pending the determination of the legality of Group Health Association by this Court they said they should not extend privileges to him. In other words, at that time, in February 1938, Group Health in the judgment of the District Attorney and Corporation Counsel was operating contrary to law, and pending the determination of whether Group Health was operating in accordance with law, Columbia made that straightforward statement to Dr. Selders. In less than three weeks Dr. Selders had the presumption, the arrogance, with the full knowledge that he had no right to try surgery in the Garfield Hospital, to send a patient up there and said, "I am going to operate on her." Did that young lady go as any other young lady would to the hospital? No, two witnesses with her; a man, a member of G. H. A., and a lady, also from G. H. A. She was not taken out under the influence of morphine. This is what happened: She came in to the hospital; she was assigned to her room; the nurse started to get her ready for the operation. The doctor came in and upon inquiry he learned it was Dr. Selders who was going to operate. "Why," he said, "Dr. Selders, you know, has no privileges in this hospital. We have our entire staff." Selders knew that. Selders knew he had no right to come in there. And then she, together with her two witnesses, said, "No," making evidence so she could testify. She didn't have an acute appendicitis case. Selders said she had because all hospitals permitted doctors to operate in an emergency. Now, if Selders could make out she had appendicitis he could operate. So she got up and dressed and went out. She had the nurse in attendance in preparation for the operation, and the nurse administered to her some kind of a sedative. She got out to the taxicab, left, and got another doctor who operated on her in Columbia Hospital; an ordinary appendicitis case—no hemorrhage whatsoever. She could not take another doctor at Garfield because she had these two witnesses, and then the prosecution could not make that representation that she did. Now then, let us just say this in answer to the three categories in which the attack, so-called, has been classified by the prosecution. Let us take the question as to whether or not the District Medical Society made an unjustifiable attack upon Group Health Association to prevent their obtaining doctors on their staff. The answer is No. 1. In the District of Columbia alone there were 1,200 doctors, any one of whom they could have drawn. The second answer is this: As I told you, the District Medical Society is purely voluntary. You can join it or not, just as you please, provided you have the qualifications of a doctor. Now, when you join it, one of the conditions is that you live up to the rules and regulations of the Society which you have joined. If you join the Masons you have to live up to the Masons; if you join the Knights of Columbus you must live up to the Knights of Columbus; if you join the Elks you must live up to the Elks; you cannot violate its rules and expect to remain a member. A man cannot parade as a member of the Masonic order and violate all its rules and regulations. Scandiffio knew when he joined the Society of its rules and regulations. He ought to. They have been the same since 1819, almost. The American Medical Association ethics have been such since 1847, and Scandiffio knew he had no right to join G. H. A. until he first had his contract with G. H. A. approved, and so did Dr. Lee, because both Dr. Scandiffio and Dr. Lee were aware of the regulations.

Then what happened? Then the legal staff of Home Owners' Loan took the case in hand. Here was a chance to make more evidence, so they promptly advised Dr. Scandiffio to withdraw his resignation and make the District Society prefer charges against him, and that is precisely what Dr. Scandiffio did; and when Dr. Scandiffio came up to answer the charges he had a battery of lawyers, five of the high counsel of Home Owners' Loan Corporation, and they are the ones who built up this record he said he wanted to introduce for you to read.

If you have time to read it, if we don't all celebrate the Fourth of July sitting here, I want you to read the haughty arrogance of those five men who demanded the right for Scandiffio to be on their staff, and at the same time to remain a member of the association, whose rules and regulations be violated. That is to say, nothing should be done against Group Health. They talk of persuasion, and I am coming to that; yet when we use persuation they condemn it as an act of conspiracy.

In other words, Group Health could employ whomsoever it wanted in violation of the rules of any organization, and if the organization said you have your choice: you can still be a member of the Medical Society but you cannot be on Group Health's staff too, he said "I will be both"; that is Scandiffio. And don't forget, at the time Scandiffio was being tried because he had taken employment from an organization which had refused to furnish any information whatsoever to the District of Columbia Medical Society, and concerning which the Medical Society could learn about only from what it could pick up here and there; at the very time Scandiffio was being tried it was the considered judgment of the two chief prosecuting officials of the District of Columbia that Group Health was violating the law; and yet it is an act of conspiracy, and in furtherance of a combination to violate the Sherman Act, because the District Medical Society refused to have it said of it that it would have a member on its staff which was operating or assisting in operating in an organization that was violating the law. That is Scandiffio.

Lee presented his resignation at the same time Scandiffio did but he didn't go so far as to follow the advice of counsel of H. O. L. C. and make a battle out of what ordinarily would be gentlemanly conduct, to wit, "If you don't like to remain with the organization, resign."

Now then, we get to the second phase, that is, the consultation. That goes back one time more to this section 5, which I spoke to you about.

You know it is difficult, quite, to comprehend the psychology of the prosecution in the presentation of its facts; what it is going to prove. They have told you in one breath that this Group Health Association was an experiment which would give adequate medical care at a cheaper price. Now don't forget, the only thing involved in this case is price, price, price. These men are engaged in an economic experiment. If they would only leave the practice of medicine alone there wouldn't be any difficulty, but in the assumption of the right not merely to make an economic experiment, but also the right to control medicine, they have clashed with an organization which over the centuries has learned how medicine ought to be practiced in the public interest, and it is the only group on earth who can determine that. Now, they say that this organization was equipped to render this service. If so, why did they need to consult with other doctors, members of the District Medical Society? They had 1,200 other doctors in the District to pick from. Why is the point of attack aimed at the District Medical Society? Because evidence is wanted. In other words, if they might collect enough of these circumstances here to present in a proposed speech as to what they are going to prove they can make it appear to you that the District of Columbia Medical Society was out to destroy Group Health Association, and the District Medical Society, representing 825 of 2,000 doctors, was going to do that. The fact of the matter is they were out to destroy the District Medical Society by this new experiment which if it succeeded as intended would do. In other words, if you take everybody who needs medicine away from the doctor, the doctor has got to stop his practice of medicine.

Now, the interesting question is going to arise, where is the patient going to go whom Group Health doesn't take care of? The result will be that the District Medical Society and all medical societies in the United States, having been destroyed in the confusion which results,—the opposition which they fear will no longer exist,—and then they can superimpose on the practice of medicine as it has been known this practice in accordance with their theory.

Now then, the theory of what was done with the hospitals is so closely related to what Group Health offers its members that let me very briefly go into this because I see my time is slipping; I know you must be very tired of listening to lawyers harangue.

I think you have heard it said so much by the prosecution about this being a consumer cooperative whereby those in the low income bracket were able by budgeting medical expenses to protect themselves against a cataclysm which might bankrupt them or so destroy the family finances that they would no longer economically go on.

Now let us see what Group Health is. You would think, would you not, that the association or group which has been pictured by the prosecution to you would be a group who needed medical care. That clinic was organized and equipped to function for those who need care, you would suppose. It was not. Before you go into Group Health you must pass a physical

examination. If you don't pass the physical, you don't get into Group Health. In other words, if you have some ailment; if you are a sick man, what becomes of this claim of medical care; you cannot get it.

Now suppose you happen to slip by the doctors' examination and sometime within the next thirty days or within three years you develop a disease that requires more than one treatment within two years. You need it; but if you get it you pay for it. In other words, the very ones who need the care don't get it. Who is going to take care of them? Dr. Brown answered that in the conference of June, 1937, up in the office of the Medical Society in the District of Columbia. They said, "What becomes of them?" "Oh," he said, "we will give those to you." Kind of him, wasn't it?

Now, number 1: I suppose the answer to that will be, "Oh, this is preventive as well as curative." Whether it is preventive or curative, nobody gets in unless he passes this examination.

THE LOW INCOME BRACKETS

Now, about the low income brackets, and I think you are going to hear a lot about someone in Arkansas and Missouri and Texas not getting proper care. Let me impress upon you one thing: this conspiracy involves the Medical Society of the District of Columbia only, and don't let your minds go wandering off down there to Arkansas and Texas; don't get confused about this background. The District of Columbia has never been wanting for doctors. There is a doctor for every three to four hundred people in the District; the Group had only a doctor for one in every eight or nine hundred. So all this talk about what happens in Arkansas, Missouri and Texas, whether it occurred in the wilds of the wooly West had nothing to do with the District of Columbia.

Is it for the low income people? Not at all. It is for anybody. Some of their high officials belonged to Group Health. The man who is able to pay for medical services got the same service as the poor charwoman who would have gotten it from any doctor in the District for nothing.

It isn't for the man who couldn't afford medicine because if you don't pay your dues within ten days you are out; that is within ten days after the first of the month. So at the very time you need the Group Health experiment most is the time you don't get it.

What becomes of the man who can't pay his dues? He falls back on the defendants; they take care of him. The thing was commercialized from the very outset. It was so very extensively commercialized that standing up against that little clause I quoted from the charter of the corporation of the Medical Society of the District of Columbia, which said that under no circumstances can this corporation control the prices at which services shall be rendered; and standing against the very first section of the constitution of the A. M. A. which said that the practice of medicine shall be for the good of humanity, the distinction is so obvious. They not only require the payment of dues but they—when they first started and until they found that was illegal too—they put on a check-off system, the system that labor unions use in the factories and mines, and the boss deducted from the employees' checks the amount of his dues; and they still retain in their by-laws after they have amended them so many times that the by-laws today resemble in no way the by-laws under which they began, they still say that in the event of dissolution of Group Health and the sale of its assets, equipment et cetera, everything which it may own, that the corporation shall have a first lien on any dividend which any member might get.

Now, what is the type of service which they render? They render the ordinary clinical services just as they said Dr. McGovern had made a report upon to the Medical Society after it was found that they could not render the services which they proposed to render at anything like what it cost to render such services. You had heard this morning that the cost of medicine had risen with the cost of equipment such as x-rays, and that is precisely what took place. They were compelled to do two things: first, cut down the service and then raise the price so that the character or type of services, and the cost of it today are in no wise what they were when they began, but the peculiar objection which is offered in reply to the argument of the prosecution to it that the staff of G. H. A., unhampered, unrestrained, and uninterfered with determined the type of medical care of the patient,—that is the point which they raised as you will recall—no longer exists, and never did, except in Group Health.

Dr. Brown was compelled to resign because having believed from a reading of the brochure of the conditions there described, and believing that if there was any way, shape or form whereby they could be remedied that he ought to try it, he did accept the position as Medical Director. He then found that his efforts as a director were being thwarted and hindered by the board of trustees. Who is the board of trustees? Once again on the question of whether it is a government institution or not. H. O. L. C. has two men on the board. The amendment and by-laws must all be approved by the H. O. L. C. These trustees are laymen. The constitution and by-laws provide that on 15 days' notice they can change the character of service which is being rendered. In other words it violates that clause of the code of ethics of the medical profession which says that between the doctor and the patient there shall be no third person intervening.

Because the doctor alone knows how to care for the patient, and some layman should not come in and try to tell the doctor what should or should not be done.

Then again, for the same reason, it destroys the relationship which exists, the confidence between the patient and the member; but the answer to the prosecution of that this morning was that they preserved the freedom of choice because the member could go and employ another physician if he did not like the member of the staff of G. H. A.

Well, if they destroy this fee for service basis, which they discussed, and they destroy those who were practicing medicine, what becomes of those whom the G. H. A. can't or won't take care of?

I am not going to exhaust your patience or your time or wear you out with an analysis of G. H. A. Their by-laws, together with their amendments and the practices pursued by this Association to avoid the inevitable judgment that it was an illegal institution and illegally conducted business and the fact that it was an insurance company which was doing an insurance business without a license, will all be presented to you for your consideration and you will see how skilfully guided the G. H. A. was with the backing of the Health Economics and the good will to avoid a decision and determination which they expected to be true when they filed the amendments here in order to obtain Judge Bailey's decision.

I think the prosecution said to you that the Twentieth Century Fund, the Health Economics and the Good Will Fund had had nothing to do with Group Health. I think the evidence already directed to your attention indicates the contrary; but you will find from the annual reports of the Twentieth Century Fund where the monies are, of thousands of dollars being donated to Group Health so that for a time Group Health was able to operate upon subsidized funds; and the Good Will Fund or the Health Economics Association sent down here a person who from August, 1938, had been taken from the Rural Electrification Association, and installed in offices at 1422 I or K Street, paid for by one of these funds, and his salary paid for by one of these funds for the ensuing year.

Yet, the very purpose for which Group Health was formed was what? Mark you, I am merely following the language of the prosecution: to supply to the employees of H. O. L. C. this adequate medical care at reduced cost, and when Group Health started out, it starts out with employees of H. O. L. C. in its membership, some 2,000, and then had 200. They have now gone out and tapped other Government departments to keep up this membership in it, and instead of giving these medical services to H. O. L. C., and under that representation they got the money, $40,000, they are now doing practically nothing for the employees of H. O. L. C. and never took over the emergency rooms in H. O. L. C. They are obtaining new memberships from new ones whom they have gone after by solicitation and by advertising through their names.

HOSPITALIZATION

Now, I am going to comment briefly on the hospitals in the District of Columbia. Throughout this case you will find nothing which the American Medical Association, as an association, has done as a conspirator in this case. You will find nothing which the Harris County Medical Association has done, or any other association, including the Medical Association of the District of Columbia.

Counsel for the prosecution concedes to us the right of honest, fair persuasion; at least they give us the right to disagree.

We disagreed with Group Health on good grounds and for good reasons, and since the decision in Judge Bailey's instance there has not been any hospital committee in the Medical Association of the District of Columbia.

The only instance in which the hospitals have been approached at all was first by a letter of July 29, 1937. That was the letter in which the "white list," so-called, was sent to the hospitals, and not a member of the District Medical Society ever knew that list went to the hospitals because there was no authorization to send it to the hospitals; the authorization was merely to send it to the members of the Association itself.

But whether it was authorized or unauthorized there could have been nothing in the "white list" itself to complain about because of the absence of Group Health's name thereon because Group Health had not been yet organized.

Then we come to the resolution which was read to you verbatim by the prosecution sponsored by Dr. Willson.

That resolution was offered in a Society meeting, and the prosecution knows and knew when they represented it to you that that resolution was referred to a committee, and the only action taken on it was "Pass it on to a committee and let us see what it is all about."

Then what was the result of that resolution? There came out of that committee not the resolution which was read to you this morning but the resolution under date of December 1st, 1937, which was sent to the hospitals on the second day of December, 1937, and that resolution so stated squarely "For educational purposes alone, we brought your attention to the recommendation that the members of the staffs of hospitals be members of the American Medical Association." That was the resolution.

Now, they impugn that resolution, saying to you that it does not mean what these honorable gentlemen said when they wrote it, but behind it is some infamous purpose which never originated in the mind of anyone except for purposes of prosecution.

With reference to the hospitals in the District of Columbia and the American Medical Association letter or response thereto, which was called to your attention this morning, occurring in August, 1937, and more particularly, I think from either Columbia or Georgetown, may I say this: there again in August, 1937, Group Health had not even started to function.

But, the point of the prosecution seems to be that once somebody had the thought started, then everybody else must bow down and do nothing about it. He could not even use persuasion, which is given to anybody under the Constitution to use, but everybody must bow down before the G. H. A.

Now, it may surprise the prosecution to know that Dr. Cutter of the American Medical Association who wrote the letter never had heard of Group Health Association in his life when he wrote it.

That was one of the ordinary, orderly routines of investigating which was made by the American Medical Association and which has been made year in and year out over an extended period of time, and it was at that time suggested to the Washington hospitals that if they could they should have on their staff members of the American Medical Association, just as Group Health here tried to get members of its staff on the staffs of hospitals, but the right which we tried to exercise is urged upon you as an act of conspiracy, a pressure, a tyranny, and a destruction.

Therefore what becomes of the point that any attack was made upon Group Health, in so far as the hospitals are concerned, when we consider that at that time under the studied and deliberate judgment of everyone who had looked over Group Health itself, it was operating contrary to law and was an' illegal institution, and they can't point to a thing following that declaration. I think he told you eight hospitals have members of Group Health upon their staffs since the declaration by Justice Bailey.

You will see from the testimony that Group Health, the Group Health of 1938, was an entirely different institution from 1937.

Now, then, I think, ladies and gentlemen, I won't take up any more of your time and I won't talk any further, but these briefly are the headings and the outlines of what this testimony will show, probably extending over quite a time because of evidence which is documentary, but you will find furthermore that every explanation which is made is supported, in so far as the District Medical Society is concerned, by its own documentary proof.

They have objected to the theory of it. Yes. That they will testify in their objection. Yes.

Up to that point they expressed that objection in a way in which they were motivated and actuated only and solely for the benefit of the profession. In the practice of medicine where any assault was made upon them they were compelled to meet it because they knew the head and the front of the institution directing that assault was doing so for the purpose of destroying it in order that the experiment, the future of which they confessed themselves this morning, they knew not about whether it was good or bad, they could not tell you, but let the experiment go on, and then some time later there will be confusion and destruction.

(To be continued)

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—H. R. 2112 has been reported to the House, without amendment, proposing to authorize the Secretary of the Navy to appoint in time of war or national emergency declared by the President to exist, for temporary service, such acting assistant surgeons as the exigencies of the service may require. H. R. 2278 has been reported to the House, without amendment, proposing to authorize the Secretary of War to detail not to exceed 2 per cent of the enlisted men of the regular army as students at such technical, professional and other educational institutions, or as students, observers or investigators at such industrial plants, hospitals and other places as shall be best suited to enable such enlisted men to acquire a knowledge of or experience in the specialties in which it is deemed necessary that such enlisted men shall perfect themselves.

Bills Introduced.—S. 666, introduced by Senator Walsh, Massachusetts, proposes to establish in the Department of Labor a Bureau for the Welfare of the Deaf to (*a*) collect, tabulate and make public statistics pertaining to the deaf, their employment and their welfare; (*b*) ascertain what fields of employment are available to the deaf, and to endeavor to create new such fields of employment; (*c*) acquaint employers in private industry with the special capabilities of the deaf and to encourage the employment of the deaf on an equal basis with the hearing; (*d*) cooperate with the heads of the various departments of the government and with the Civil Service Commission and states and political subdivisions thereof in expanding the opportunity for the employment of the deaf in public service, and (*e*) cooperate with any public or private agency in the vocational rehabilitation of the deaf. S. 697, introduced by Senator Clark, Missouri, proposes to amend the section of the Selective Training and Service Act of 1940 relating to the deferment of college students so as to provide that any person who, during the year 1940, entered on attendance for the academic year 1940-1941 (1) at any college or university which grants a degree in arts or science to pursue a course of instruction satisfactory completion of which is prescribed by such college or university as a prerequisite to either of such degrees; or (2) at any such university to pursue a course of instruction to the pursuit of which a degree in arts or science is prescribed by such university as a prerequisite shall, while pursuing such course of instruction at such college or university, be deferred from induction under the act (*a*) until the end of such academic year, or until July 1, 1941, whichever occurs first, if he is ineligible, under the established rules and regulations of such college or university, to complete such course of instruction before Feb. 10, 1942, or (*b*) until he completes such course of instruction, or until Feb. 10, 1942, whichever occurs first, if he is eligible, under the rules and regulations of such college or university, to complete such course of instruction before Feb. 10, 1942. H. R. 2099, introduced by Representative Tolan, California, proposes to amend the Social Security Act so as to provide grants to the states for needy disabled adults incapable of self support. H. R. 2817, introduced by Representative Knutson, Minnesota, proposes to exempt from the taxes imposed by the Social Security Act service performed in the employ of a voluntary employees' beneficiary association providing for the payment of life, sick, accident or other benefits or the furnishing of medical care or hospitalization, to members of such association or their dependents, if no part of its net earnings inures to the benefit of any private shareholder or individual, other than through such payments and if 75 per cent or more of the income consists of amounts collected from members and/or contributed by the employer for the sole purpose of making such payments and meeting expenses. H. R. 2858, introduced by Representative Allen, Louisiana, provides that where, as a result of sound medical evidence and/or examination, it has been established by the United States Veterans' Administration that a veteran's service-connected disability, resulting from his service in the armed forces of the United States during any war, has

caused a severe industrial inadaptability, then in that case the veteran shall be considered as permanently and totally disabled and shall receive a rating of permanent and total for compensation purposes and for any other benefits to which such rating might entitle him, regardless of any rating which any rating schedule might designate for such specific disability or disabilities. H. R. 2860, introduced by Representative Allen, Louisiana, proposes to authorize a federal appropriation of $450,000 to construct an addition to the existing United States Veterans' Administration Facility at Alexandria, La., for the care and treatment of general medical, surgical and neuropsychiatric disabilities. H. R. 2945, introduced by Representative Coffee, Washington, proposes to amend the Longshoremen's and Harbor Workers' Compensation Act to extend its benefits to boommen and raftmen employed in lumbering operations on navigable waters of the United States. H. R. 2987, introduced by Representative Kilday, Texas, proposes to define the term employee as used in the Social Security Act to exclude an officer of a corporation exempt from income tax under the provisions of section 101 of the Internal Revenue Code who does not receive compensation for his services. H. R. 3010, introduced by Representative Beckworth, Texas, proposes to authorize for each fiscal year beginning with the fiscal year ending June 30, 1941 a federal appropriation sufficient to provide grants for the states for assistance to needy incapacitated adults who are 18 years of age or more and are permanently incapable of self support by reason of a physical disability or defect, other than mental. H. R. 3100, introduced by Representative Walter, Pennsylvania, provides that in any case in which proof of age or of place of birth or proof of a death is required in the administration of any law of the United States the agency administering such law shall accept as proof of age, or of place of birth, or of proof of a death, any document purporting to show such fact when it is duly certified as a correct copy of an original document on file with the official custodian of records where the birth or death occurred if such original document has met all the requirements of the laws of the state where such birth or death occurred.

STATE MEDICAL LEGISLATION

Arizona

Bills Introduced.—H. 1 proposes to create a state department of health to succeed to and be vested with the duties and powers heretofore by law vested in and imposed on the state board of health, the superintendent of public health, the state registrar of vital statistics, the supervisor of public health nursing, the state laboratory, the director of the state laboratory, the board of regents of the University of Arizona with respect to the state laboratory and the director thereof, and the state dairy commissioner. The department is to be divided into the following divisions and bureaus: division of local health administration, division of maternal and child health, division of vital statistics, division of sanitary engineering, state laboratory and division of public health nursing. The department is to be headed by a superintendent of public health, who is to be appointed by the state board of health. The state board of health, which is to advise the superintendent in the performance of his duties and is to formulate general policies affecting the public health, is to consist of five members, appointed by the governor for four year terms. H. 9 proposes to require every physician or other person engaged in the antepartum care of a pregnant woman, or attending a pregnant woman at the time of delivery, to obtain a specimen of her blood not less than ten days after the first professional visit and to submit the specimen to an approved laboratory for a standard laboratory test for syphilis. S. 40 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of the certificate of a licensed practitioner of medicine and surgery that (1) the party has been subjected to a thorough physical examination, tuberculin test and adequate laboratory tests to determine the presence of gonorrhea or syphilis and (2) the party is free from infectious, contagious and venereal disease. H. 43 proposes to make it unlawful for any hospital exempted from taxation, in whole or in part, to refuse to render promptly the necessary medical treatment to any person in case of accident or injury, or in case of any diseased, infected or abnormal physical condition which is likely to cause death or severe injury.

Arkansas

Bills Introduced.—S. 60 proposes to enact a new optometry practice act. The bill states that "The practice of Optometry is hereby declared to be a learned profession, and the same rights, powers and duties are hereby declared to attach thereto as attach to other learned professions. The profession and the practice of Optometry is hereby defined to be the employment of any method or means other than the use of drugs, medicine or surgery for the analysis of any optical defect, deficiency or deformity, visual or muscular anomaly of the visual functions, or the use of scientific instruments to train the visual system." The bill proposes to prohibit certain types of advertising and practices in connection with the practice of optometry and is so worded as to include licensed physicians and surgeons within the prohibitions. However, a section of the bill provides that nothing in the act, with the exception of the prohibited advertising and practices referred to, shall apply to physicians and surgeons. H. 84 proposes so to amend the basic science act as to exempt chiropractors from its provisions. H. 143 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a physician's certificate that the party is free from venereal disease and is not idiotic, feebleminded, imbecilic, epileptic or insane as nearly as can be determined by a thorough physical examination and such standard microscopic and serologic tests as are necessary for the discovery of venereal disease. H. 151 proposes that the basic science act "shall not apply to any person who was a resident practitioner of Chiropractic on January 15, 1940, and to whom a license to practice chiropractic was issued by the State Board of Chiropractic Examiners prior to said date." The bill also proposes that it shall be unlawful for any person engaged in the practice of chiropractic to advertise in any manner. S. 73 proposes to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate of a licensed physician stating that the party is free from any venereal disease and is not idiotic, feebleminded, imbecilic, epileptic or insane as nearly as can be determined by a thorough physical examination and by standard microscopic and serologic tests. S. 81 proposes to require every physician attending a pregnant woman for conditions relating to pregnancy during gestation or at delivery, to take or cause to be taken a sample of her blood at the time of the first examination and to submit the sample to an approved laboratory for a standard serologic test for syphilis.

California

Bills Introduced.—A. 350, to amend the law permitting the court in any civil or criminal proceeding to appoint one or more expert witnesses to investigate and testify concerning matters on which the court deems expert evidence advisable, proposes to give this right also to juvenile courts. A. 455 proposes to exempt from execution or attachment the tools or implements of a chiropodist. A. 563, to amend the laws relating to nonprofit corporations, proposes to permit a nonprofit corporation to be formed for rendering services "including professional services of persons licensed under any chapter of the Business and Professions Code." The bill proposes that a nonprofit corporation formed for the purpose of defraying the cost of professional services may have three or more classes of members and must offer membership therein and an opportunity to render professional services on a uniform basis to all regularly licensed members of the particular profession or professions concerned. A. 596 proposes to repeal Statutes, 1937, ch. 804, regulating the conduct of clinical laboratories and to enact in its place a new chapter in division 2 of the Business and Professions Code, to be entitled "Clinical Laboratory Technology." This bill proposes to make it unlawful for any person to make any test or examination in a clinical laboratory which requires the application of one or more of the fundamental sciences, such as bacteriology, biochemistry, serology and parasitology, unless the person is either a licensed physician and surgeon, is a licensed clinical laboratory technician or is a licensed clinical technologist. The bill proposes to set up certain educational standards with

respect to persons desiring to be clinical laboratory technologists, defined by the bill as persons engaging in the work and direction of clinical laboratories. The bill also sets up certain standards for a person desiring to act as a clinical laboratory technician, defined as any person other than a physician and surgeon who, under the direction of a clinical laboratory technologist or a physician and surgeon, performs the technical procedure called for in a clinical laboratory. The bill defines clinical laboratory as any place, establishment or institution organized and operated for the practical application of one or more of the fundamental sciences by the use of specialized apparatus, equipment and methods for the purpose of obtaining scientific data which may be used as an aid to ascertain the presence, progress and source of disease. S. 302 proposes that any action by or on behalf of a minor for personal injuries sustained prior to or in the course of his birth may be brought within four years from the date of injury and that the time such minor is under any disability shall not be excluded in computing the time limited for the commencement of the action. A. 503, to amend the medical practice act, proposes that in grading the examination questions of an applicant for a license to practice medicine a credit of 1 per cent must be granted on the applicant's general average for each year of actual licensed practice in the United States and Canada, which credit shall not exceed 10 points on such general average. A. 562 proposes that any nonprofit membership corporation operating a medical and surgical service plan with participation available to all duly licensed doctors of medicine may make, enter into and perform medical and surgical service contracts and may contract with any agency or instrumentality of the United States in aid or furtherance of such contracts, and may accept, receive and administer, in trust, funds directly or indirectly made available by any agency or instrumentality of the United States. Any such corporation in the administration and trust of such funds is to be deemed an instrumentality of the United States. A. 723 proposes to exempt from tax the gross receipts from sales of and the storage, use or other consumption in this state of medicines and drugs. A. 1073, to amend the laws relating to the adulteration, mislabeling, misbranding, advertising and sale of drugs and devices, proposes that the term "drugs" shall include products sold for their vitamin potency when medicinal claims are made for such products. The bill also proposes that a drug shall be deemed to be misbranded if it does not state on its label the kind and quantity or proportion of any iodides, phenol, ephedrine, epinephrine or amphetamine. The bill also proposes that a drug shall be deemed to be misbranded if it contains any quantity of thyroid unless it is sold on a written prescription of a licensed physician, dentist or veterinarian. S. 645 proposes to provide a system of compulsory health insurance to be administered by the agency administering the state unemployment insurance system. S. 1065 proposes to make it the duty of any physician, midwife, nurse, maternity home or hospital or any person attending or assisting in any way at childbirth to treat both eyes of the infant within two hours after birth with a "prophylactic efficient" treatment.

Connecticut

Bills Introduced.—S. 34 proposes to enact a separate massage practice act and to create a board of examiners in massage to examine and license applicants for licenses to practice massage. The bill proposes to define massage as "any process or action of conjoint motion and pressure applied by hand, such as rubbing, stroking, kneading, tapping or other similar manipulation, with or without the application of creams, lotions or liniments or the use of hand vibrators or rollers to any part of the human body for the purpose of relieving pains, aches, stiffness or soreness of muscles or for the purpose of inducing blood circulation or reducing conditions of obesity, or for any other remedial purpose, including the use of any and all other manual means such as physical exercises for the conditioning of the human body." H. 77 proposes to establish a Council on Mental Health to direct and coordinate the activities of institutions concerned with the public care of the mentally sick, mentally defective, epileptic and inebriate and to study the needs of the state and to initiate and direct programs of prevention and follow-up activities outside the institutions. H. 32 proposes to appropriate $50,000 to the department of health to be used for the study of cancer and the maintenance of diagnostic and treatment clinics for the biennium ending June 30, 1943. H. 79 proposes to create a Commission on the Care of the Chronically Sick and Infirm. The commission is to study the extent of the needs for the care of the chronically ill and formulate policies with respect to the type of disease and the persons for whom such care shall be provided. H. 126, to amend the laws regulating the practice of the healing arts, proposes, among other things, (1) certain additional causes for the revocation or suspension of licenses; (2) that disciplinary proceedings be instituted by filing written charges by the state department of health with the examining board representing the branch of the healing art practiced by the practitioner; (3) that disciplinary action may be had by a majority vote of the affected examining board, rather than by unanimous vote as the law now provides; (4) that applicants for licenses to practice any form of the healing art must be citizens of the United States; and (5) that applicants for licenses to practice any form of the healing art before beginning the study of medicine must have completed a one year's college course, including courses in chemistry, physics and general biology, and after July 1, 1947 must have completed a two years' college course. S. 35 proposes to create a state department of mental health to consist of a commissioner of mental health and a mental health council. The commissioner is to be given the power to inspect state institutions for the mentally sick, mentally defective and epileptic and to coordinate the activities of such institutions. The mental health council is to establish districts from which mentally ill persons in need of state hospital care can be admitted and shall establish standards for, investigate, license and inspect private institutions for the care and treatment of the mentally sick, mentally defective and epileptic. S. 79 proposes to transfer the bureau of occupational diseases from the department of health to the department of labor and factory inspection and to designate it as the division of industrial health. The bill proposes to require the division of industrial health to investigate industrial establishments and to make tests for the purpose of determining whether the health of the employees is endangered by any conditions of employment. The chief of the division is to prescribe and recommend means for eliminating, obviating or reducing industrial health hazards. The division is also required to publish from time to time the threshold limits, or limits of tolerance, for injurious dusts, mists, fumes, vapors, gases and materials in work places. The bill also requires every physician who has knowledge of any person whom he believes to be suffering from occupational poisoning or occupational disease to report the facts to the division of industrial health. S. 37, to amend the laws regulating the operation of institutions for the treatment of detention of insane persons or of persons suffering from other abnormal mental or nervous conditions, proposes to vest the licensing of such institutions in the state department of mental health. H. 76, to amend the law which prohibits a hospital receiving a state appropriation from receiving more than $8 a week for the care of any 1 patient whose expenses are paid by the state or any subdivision thereof proposes that "if the total of the expenses incurred by the State for hospital care during any fiscal period at said rate of eight dollars a week plus the annual appropriation of the General Assembly to such hospital shall not be sufficient to pay such hospital for such care at the rate of five dollars per day for each such patient, such hospital shall be paid the deficiency by the State." H. 127, to amend the law relating to the qualifications of the commissioner of health, proposes to require the commissioner not only to be a graduate of an acceptable medical college and to have had at least five years of experience in actual practice but also to have had a minimum of one year of university graduate instruction in public health as evidenced by a certificate of graduation or a degree in public health. H. 82, to amend the law regulating the operation of institutions for the treatment or detention of the insane or persons suffering from other abnormal nervous or mental conditions, proposes, apparently, to vest the administration of the law in the State Council on Mental Health. H. 128, to amend the law relating to the tuberculosis commission, proposes that the commission shall cause instruction of the public in rules of living essential to the suppression of tuberculosis and shall provide and maintain within or apart from the state sanatorium facilities personnel for the detection of tuberculosis in its early stages, and for the rehabilitation of the

tuberculous. S. 231 and H. 367 propose to appropriate $50,000 to the department of health for the study of cancer and the maintenance of diagnostic and treatment clinics for the biennium ending June 30, 1943. H. 184 proposes to enact a separate physiotherapy practice act and to create an independent board of examiners for physiotherapy to examine and license applicants for licenses to practice as physiotherapy technicians. The bill proposes that "The practice of physiotherapy technique is defined as (*a*) The performing, for compensation received or expected under the direction of a licensed physician, or any professional service requiring special education, knowledge and skill in the physiotherapy treatment of injury, disease or deformity; (*b*) Physiotherapy is understood to be the treatment of patients by physical means including the various modalities of electricity; light; heat; massage; exercise and water." S. 65 proposes that any person charged with driving a motor vehicle while intoxicated may demand a blood or urinal test or both to determine the amount of alcohol in his blood system and that the results of such tests shall be admissible as evidence at the trial of the accused person. H. 732 proposes that $2.50 of the fee paid by each motor vehicle operator shall be placed in a fund to be used to defray the expenses of hospitalization and physicians' fees in cases of injuries caused by motor vehicle accidents.

Delaware

Bills Introduced.—H. Res. 1 proposes to abolish the office of coroner in the respective counties. H. 6 proposes to establish the office of medical examiner for the state of Delaware to assume the functions, among other things, of the coroner's physician of each county. The medical examiner, the bill proposes, must be a licensed physician and a skilled pathologist, microscopist and toxicologist. The bill proposes that whenever in the state any person shall die from criminal violence, by casualty, by suicide, suddenly when in apparent health or when unattended by a licensed physician, the medical examiner shall be notified by the person or persons having knowledge of the facts. Immediately on receipt of such notification the medical examiner or a deputy or assistant must take charge of the dead body and investigate the essential facts concerning the circumstances of death. If the cause of death is established beyond doubt, the medical examiner shall so report to the attorney general; but if an autopsy is necessary the medical examiner shall perform it and forward a detailed description of his findings to the attorney general.

Georgia

Bills Introduced.—S. 55, to amend the law authorizing the operation of nonprofit hospital service plan corporations, proposes that (1) all plans offered by such corporations must afford the subscriber and his dependents the right to select the services of any approved hospital in the state and (2) each such corporation shall be authorized to accept applications for memberships and to issue contracts only to persons residing in counties in which the hospital service plan of such corporation shall have been approved by the county medical society of that county. H. 12 and S. 10 propose to create a state hospital authority to consist of the governor, the state auditor and the attorney general. The state hospital authority is to succeed to and be vested with all the powers, duties, obligations and liabilities vested in or imposed on the state hospital authority created by the act of Feb. 1, 1939. H. 122, to amend the workmen's compensation act, proposes to make compensable disability arising from any one of some twenty-five stated occupational diseases. H. 201, to amend the chiropractic practice act, proposes (1) that "Chiropractors who have complied with the provisions of this Chapter shall have the right to adjust patients according to specific chiropractic methods, shall have the right to use air, light, heat, water and exercise in the treatment of disease, and shall observe State, municipal and public health regulations, sign death and health certificates, reporting to the proper health officers the same as other practitioners. Chiropractors shall not prescribe or administer medicine to patients, perform surgery, nor practice obstetrics or osteopathy," (2) to define chiropractic to be "a drugless health science, which teaches the art and philosophy of locating and correcting, by scientific methods, any interference to nerve transmission, including hygienic, sanitary, dietary and other natural and physical measures which promote health and prevent disease. It also includes the use of electricity, X-ray photograph, but the X-ray shall not be used for therapeutical purposes," and (3) to require chiropractors to renew their licenses annually and to condition such renewal on the presentation by each licentiate of evidence that he has attended in the preceding year at least one of the two "educational" programs conducted by the Georgia Chiropractic Association.

Illinois

Bills Introduced.—S. 10 proposes to recodify the cities and villages act. Among other things, the bill proposes that in hospitals established by cities of less than one hundred thousand population "All physicians who are recognized as legal practitioners by the Department of Registration and Education shall have equal privileges in treating patients in such a hospital." H. 51 proposes to require every person employed in any capacity in any place in which food is sold for consumption on the premises to submit annually to an examination by the Department of Public Health to determine whether he is free from communicable tuberculosis or venereal disease.

Iowa

Bills Introduced.—S. 95 and H. 122 propose to enact a new pharmacy practice act and to limit the retail sale and distribution of drugs and medicines to pharmacies or drug stores operating under licenses issued by virtue of the act. The bill proposes, however, that licensed physicians, osteopathic "physicians," dentists and veterinarians may personally supply their own patients with such drugs and medicines as they may prescribe, provided they prescribe and dispense in compliance with the practice acts under which they are licensed. S. 157, to amend the chiropractic practice act, proposes, among other things, (1) to define the practice of chiropractic as "the adjustment of articulations of the spine and other incidental adjustments, and shall include the right to use air, light, heat, cold water, diet and exercise, in the treatment of disease, except as hereinafter specifically prohibited," and (2) to provide that chiropractors shall be entitled to all the rights and privileges of physicians and surgeons and shall be subject to all the duties and obligations of physicians and surgeons so far as they are not in conflict with the provisions of the chiropractic practice act and specially to prohibit a chiropractor "from practicing operative surgery, cautery, electro-coagulation, radium in any form, general hyperpyrexia, osteopathy, optometry, obstetrics, x-ray treatment, or administering or prescribing any drug or medicine included in materia medica." H. 35 proposes to authorize any law-enforcing official to direct the taking of a blood, urine, breath or body substance test to determine intoxication of any person under arrest for any crime in which the issue of intoxication may arise or in which intoxication may be the subject of the charge. Presumably the results of any test so made are to be admissible in evidence in subsequent court proceedings.

Kansas

Bill Introduced.—H. 31, to supplement the chiropractic practice act, proposes to condition the annual renewal of a license to practice chiropractic on attendance by the licentiate in the preceding year at the educational program conducted by the Kansas chiropractors' association or a postgraduate course equivalent thereto.

Michigan

Bills Introduced.—S. 66 proposes to make compensable any and all occupational diseases arising out of and in the course of employment. The bill proposes to define "occupational disease" as "a disease or disability which is due to causes and conditions which are characteristic of and peculiar to a particular trade, occupation, process or employment." S. 71 proposes that whenever in any proceedings before any court, board or commission, or other public body or officer, an order is made requiring a person to submit to a physical examination, the order shall also provide that the attorney for that person may be present at such physical examination. H. 84 proposes a supplementary appropriation of $435,452.13 to the Michigan crippled children commission for the fiscal year ending June 30, 1941. S. 79 proposes to make it the duty of every hospital to render necessary first aid and other medical or surgical treatment to any person injured in an accident.

Minnesota

Bill Passed.—H. 83 passed the house, February 5, proposing to authorize the operation of nonprofit hospital service plan corporations by which hospital service will be provided by hospitals with which such corporations have contracts to persons who become subscribers to such plans. The bill specifically provides that nothing contained in it shall authorize any person, association or corporation to engage in any manner in the practice of healing.

Montana

Bills Introduced.—H. 50 proposes to repeal the existing law regulating the manufacture and distribution of foods and drugs and to enact a law regulating the manufacture, sale, distribution or advertising of foods, drugs, cosmetics and therapeutic devices. H. 72, to amend those provisions of the workmen's compensation act requiring an employer to furnish to his injured employees during the first six months after the happening of an industrial injury necessary medical and hospital services not exceeding $500, proposes that the period and amount during and for which the employer may be liable may be extended in the discretion of the administrative board. S. 24 proposes to require an applicant for a license to practice any form of the healing art as a condition precedent to examination and licensure by his respective licensing board to pass examinations in anatomy, physiology, chemistry, bacteriology and pathology before a board of basic sciences, which is to consist of five members "none of whom shall have graduated from any school of healing art, and who shall be members of the faculty of the University of Montana at Missoula Montana State College at Bozeman." S. 27 proposes to make it unlawful "for any person, firm, corporation or association to sell, furnish, or give away, or offer to sell, furnish or give away, or have in his possession Peyote (Pellote), Anhalonium or any compound, derivative, or preparation thereof; provided that the terms of this act shall not apply to transporting, possessing or using said peyote for religious sacramental purposes within the boundaries of an Indian reservation." H. 74, to amend the workmen's compensation act, proposes in effect to make compensable the disablement from silicosis of any employee in any occupation wherein there is an exposure to silica dust. The bill proposes to define "silicosis" as a "fibrotic condition of the lungs caused by inhalation of silica dust sufficient to render the workman incapable of following his regular occupation."

New York

Bills Introduced.—A. 442 proposes to authorize the establishment and operation of a state cancer hospital at Utica. Patients who are able to pay for the care and treatment may be admitted to such hospital but preference is to be given to those who are unable to pay in whole or in part for their care and treatment. A. 501, to amend the laws authorizing the operation of medical service plan corporations and hospital service plan corporations, proposes to prohibit medical expense indemnity corporations and hospital service corporations from employing solicitors or accepting business from brokers on a commission basis. The bill proposes that all solicitors must be paid on a salary basis only. A. 527 proposes to enact a separate chiropractic practice act and to create a board of chiropractic examiners to examine and license applicants for licenses to practice chiropractic. The bill proposes that the "Science of chiropractic" means "the art of palpating, manipulating and adjusting the human spinal column by hand only. It excludes operative surgery and the prescription or use of drugs or medicines, the reduction of fractures, obstetrics, osteopathy and physio-therapy."

North Carolina

Bill Introduced.—S. 67 proposes a procedure whereby hospitals may be reimbursed by the state for care they have rendered indigent persons injured in motor vehicle accidents.

Ohio

Bill Introduced.—H. 58 proposes that "In an action or proceeding where the physical condition of a party is in issue the court may, upon application of an adverse party, order said party to submit to a physical examination by a licensed physician approved by the court."

Oregon

Bills Introduced.—S. 62 proposes a new act to provide for the making, keeping and use of vital statistics and for securing complete data pertaining to births, deaths, stillbirths, marriages, divorces and annulments of marriages. H. 79 proposes a new act regulating the manufacture, sale, distribution and advertising of foods. S. 117, to amend the chiropractic practice act, proposes, among other things, to define chiropractic as "that system of adjusting with the hand or hands the articulations of the bony framework and soft tissue of the human body, and the employment and practice of physiotherapy, electrotherapy and hydrotherapy for the treatment, cure or mitigation of human disease; provided, that no person practicing under this act shall write prescriptions for, or dispense drugs, practice optometry, or naturopathy, or do major surgery." The bill also proposes to eliminate a provision in the present act providing that it shall not be construed so as to interfere with or prevent the practice of, or use of massage, Swedish movement, physical culture, neuropathy, naturopathy or other natural methods requiring the use of hand or hands. The bill also proposes to require an applicant for a licence to have graduated from "an approved chiropractic school or college requiring for graduation a period of actual attendance equivalent not less than nine months for four years." Under the present law the required attendance at a chiropractic school is only three years of nine months each. H. J. R. 6 proposes to request the appointment of an interim commission of at least three qualified persons to make a complete survey of the teachings, staff, laboratory facilities, student bodies, physical facilities and type of training afforded in osteopathic schools, and of at least "one class A medical school." H. 98 proposes a procedure whereby hospitals may be reimbursed by the state for care rendered indigent persons injured in motor vehicle accidents. H. 103 proposes to require every licensed physician attending a pregnant woman for conditions relating to pregnancy during the period of gestation or at the time of delivery, to take or cause to be taken at the time of the first professional visit a sample of her blood and to submit the sample to an approved laboratory for a standard test for syphilis. H. 197, to amend those provisions of the medical practice act relating to the practice of osteopathy, proposes (1) to create a separate examining board for osteopaths and (2) to authorize the separate osteopathic examining board to examine and license applicants for licenses to practice osteopathy and to institute and determine proceedings looking toward the revocation of suspension of a license to practice.

Pennsylvania

Bill Introduced.—S. 51 proposes to authorize directors of school districts of the first class to furnish food, including milk, to poor school children attending their schools.

Rhode Island

Bill Introduced.—S. 51, to amend the workmen's compensation act, proposes to limit an employer's liability for reasonable medical, dental and hospital services for an employee injured from an industrial accident to $500. If no hospital services are necessary, the extent of employer's liability is to be $300. The present law limits the employer's liability in this respect to $200 or $250 according to circumstances.

South Dakota

Bill Introduced.—S. 73, to supplement the osteopathic practice act, proposes to permit the board of osteopathic examiners to license persons possessing the qualifications stated in the bill to practice surgery in all its branches. An osteopath is eligible to receive such a license if in addition to the qualifications now required by the osteopathic practice act he has served at least two years as an intern in a hospital at which general surgery is performed and which is approved by the osteopathic board and if he passes examinations to be given by the osteopathic board in surgical diagnosis, surgical technic and such other related subjects as the board may see fit to require. Even though an applicant for such an extended license may not have served an internship as above specified the board in its discretion may examine the applicant if he presents evidence of experience, post graduate work and special study in surgery.

Tennessee

Bills Introduced.—H. 426 and S. 314 propose to require applicants for licenses to practice any form of the healing art, as a condition precedent to examination and licensure by their respective licensing boards to pass examinations in anatomy, physiology, chemistry, bacteriology and pathology before a board of examiners in the basic sciences. The board is to consist of five persons appointed by the governor. "No one shall be eligible for appointment as a member of the Board who is at the time of his appointment or has ever been actively engaged in the practice of the healing art or any branch thereof, and wherever possible, members of the Board shall be selected who are not engaged in teaching in any schools for education in the healing arts." S. 314 passed the senate February 5. S. 265 proposes a new act to provide for the making, keeping and use of vital statistics.

Texas

Bill Introduced.—S. 27, to amend the motor vehicles code, proposes that in the trial of any person charged with driving while intoxicated the court shall admit in evidence the result of any chemical test or analysis of the breath, urine, blood or other bodily substance of the defendant made at the time or within three hours after the commission of the alleged defense to show the amount of alcohol in the defendant's blood. The bill further proposes that any peace officer on arresting a person for driving while intoxicated may have a chemical test or analysis made of the breath, urine, blood or other bodily substance of such person within three hours after said arrest, either with or without the consent of the accused.

Utah

Bills Introduced.—S. 71 proposes that "Before any person shall issue any marriage license, each applicant therefor shall file with him a certificate from a licensed physician and surgeon which certificate shall state that the applicant has been given an examination, including a standard serological test for syphilis, made not more than thirty days prior to the date of issuance of such license and that in the opinion of such physician and surgeon, the person either is not infected with syphilis or other venereal disease, or if so infected, is not in a stage of such disease which is or which may become communicable." S. 92 proposes to require applicants for licenses to practice any form of the healing art, as a condition precedent to examination and licensure by their respective licensing boards, to pass examinations in anatomy, physiology, pathology, bacteriology and chemistry, to be given by a committee of basic science examiners. The committee is to consist of five members, each of whom must be a full time paid professor, or associate or assistant professor, not actively engaged in the practice of the healing art but who is teaching a basic science. S. 72 proposes to require every licensed physician attending a pregnant or recently delivered woman for conditions relating to pregnancy to take or cause to be taken, at the time of the first examination or within ten days thereafter, a sample of her blood and to submit the sample to an approved laboratory for standard serologic tests for syphilis. H. 45 proposes to authorize the organization and operation of health cooperative associations to provide medical, dental, hospital and related services to members of such organizations.

West Virginia

Bill Introduced.—H. 95 proposes that whenever it is relevant in any action to determine the parentage or identity of any person or body, the court may direct any party to the action and the child of any such party and any other person involved to submit to one or more blood grouping tests to determine whether the defendant can be excluded as being the father of the child.

Wyoming

Bill Passed.—H. 40 passed the House February 1, proposing to condition the issuance of a license to marry on the presentation by each party to the proposed marriage of a certificate from a licensed physician stating that the party has been given such examination, including a standard serologic test for syphilis, performed not more than ten days prior to the date of issuance of such license, and that in the opinion of the physician the party is either not infected with syphilis or other venereal disease or is not in a state of that disease which may become communicable.

OFFICIAL NOTES

RADIO BROADCASTS

"Doctors at Work" is the title of the sixth annual series of dramatized radio programs being presented by the American Medical Association and the National Broadcasting Company.

The series opened Wednesday, November 13, and will run for thirty consecutive weeks, closing with a broadcast from the A. M. A. meeting at Cleveland on June 4. The program is scheduled for 10:30 p. m. eastern standard time (9:30 central, 8:30 mountain, 7:30 Pacific time) over the Blue network, other N. B. C. stations and Canadian stations.

The programs are broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations, and no revenue is derived from the programs. Therefore, local stations may or may not take the programs, at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

Some radio stations may be unable to broadcast the program at the regular scheduled time and may transcribe and broadcast it at another hour or even on another day. It is advisable therefore to verify the time by reference to local newspapers or by telephoning the local Blue network stations.

The programs will dramatize what modern medicine offers the individual in the way of opportunities for better health and the more successful treatment of disease. Incidental to this main theme, the programs will explain the characteristics of the different fields of modern medicine and its specialties.

Descriptive posters for local distribution may be had gratis from the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago. Program titles will be announced weekly in THE JOURNAL and monthly in *Hygeia,* the Health Magazine.

Tickets are available for each broadcast. Address the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago. Tickets are free, but a stamped, self-addressed envelop should accompany requests.

The next three programs to be broadcast, together with their dates and titles, are as follows:

February 19. One Man's Poison.
February 26. Exploring Man's Mind.
March 5. Fit to Fight.

WOMAN'S AUXILIARY

Arkansas

The Jefferson County auxiliary was addressed on October 11 by Mrs. Alfred Hathcock of Fayetteville, president of the Woman's Auxiliary to the Arkansas Medical Society.

The Sebastian County auxiliary met, October 14, at the home of Mrs. Ruth Moss Carroll and voted to contribute $10 to the state student loan fund and to renew complimentary subscriptions of *Hygeia* to the girls' club, Rosalie Tilles Children's Home, Young Women's Christian Association and Carnegie Library.

Mrs. Hathcock was guest of honor when the Sevier County auxiliary met at the home of Miss Eleanor Park. Other state officers present were Mrs. Ralph Cross, third vice president and chairman of Hygeia; Mrs. Fount Richardson, secretary, and Mrs. Pierre Redman, parliamentarian. At the October 15 meet-

ing at the home of Mrs. C. E. Kitchens it was voted to make a contribution to the library fund for tuberculosis hospitals.

The auxiliary to the Bowie-Miller Counties Medical Society was addressed, October 25, by Mrs. William Hibbitts, of Texarkana, and Mrs. Alfred Hathcock, of Fayetteville, presidents respectively of the Texas and the Arkansas auxiliaries.

The Washington County Medical Auxiliary met with Mrs. Fount Richardson for a work meeting, October 18. Mrs. Alfred Hathcock presented the *Bulletin* of the American Medical Association auxiliary and urged that as many members as possible subscribe.

The Pulaski County auxiliary met at the home of Mrs. A. C. Shipp in October. The meeting was attended by fifty, thirteen of whom were new members. The student loan fund committee reported a cookie sale at which they made $14.

At the November meeting of the auxiliary to the Ouachita County Medical Society Mrs. Arthur A. Herold, national legislative chairman, spoke on medical legislation. Mrs. C. W. Garrison spoke on the work of the auxiliary.

The Woman's Auxiliary to the Washington County Medical Society met in November at the home of Mrs. Friedman Sisco in Springdale. Twenty wash cloths were made for the WPA Nursery School at Fayetteville. Members decided to sew for the Red Cross. Mrs. H. H. Howze read a paper on "Hemophilia: One of the Causes for Political Upheaval Throughout the Centuries."

Mrs. A. A. Herold, Shreveport, La., national legislative chairman of the auxiliary, was a visitor at the meeting of the auxiliary to the Bowie-Miller County Medical Society at the home of Mrs. Harry E. Murry in Texarkana, November 22. Mrs. Herold spoke on the importance of health legislation and the part that physicians are taking in the preparedness program.

California

The Alameda County auxiliary opened the fall season with a reception at the Claremont Country Club, Dr. Gertrude Moore being the honored guest.

The Fresno County auxiliary has been approached by the local junior chamber of commerce to help in establishing an abatement district for mosquito control. The auxiliary has formed a committee for Allied relief.

The auxiliary to the Los Angeles County Medical Society had an attendance of one hundred members at a recent meeting at which Mrs. Robert Millikan's talk, "Trailing a Scientist Through India," was thoroughly enjoyed. Mrs. William C. Boeck gave an account of the state board meeting in Alameda County.

Dr. Norris R. Jones, president of the Sacramento County Medical Society, complimented forty members of its auxiliary on the splendid work accomplished during the past year. Health education will be stressed by the membership of the San Diego County auxiliary this year, arrangements having been made to assign speakers on medical topics to appear before the Girl Scouts, the Girl Reserves, the Boy Scouts, the Campfire Girls and the Parent-Teacher groups. Speakers will address adolescent boys, adolescent girls and a mixed group of adults at "Neighborhood House." Work is well under way on the survey, being conducted by the public relations committee, of which Mrs. Walton Lewis is chairman, which will produce a valuable index system of the various organizations in San Diego. More than two hundred and twenty-five organizations have been contacted, and information has been obtained as to the number of members, whether or not they have a health program and whether or not they would desire or permit speakers to appear before them. The auxiliary is also sponsoring a scholarship loan to assist worthy students in paying their expenses in medical schools.

The San Francisco auxiliary has decided to assist the British War Relief by giving a fashion talk and demonstration, the proceeds to supply medicine to the children of the British War Relief. Money recently raised for the Scholarship Fund has been sent to the universities of Stanford and California.

The Stanislaus auxiliary has embarked on a new project: It deals with occupational therapy for tuberculous patients at the county hospital. The membership will give financial and moral support, as well as help, to collect materials with which to work and will distribute the finished products.

Georgia

Three auxiliaries have recently been organized, those to the Grady County Medical Society, the Cobb County Medical Society and the Seventh District Medical Society. Plans were made to organize county auxiliaries in Whitfield, Floyd and Gordon counties.

Mrs. C. S. Pittman, of Tifton, was elected president of the auxiliary to the Second District Medical Society at a meeting in Cairo. Dr. J. A. Redfearn, of Albany, talked on the tuberculosis situation in Georgia, following which Mrs. H. G. Banister, of Ila, state president, talked on "Mobilization to Present-Day Conditions." Mrs. G. L. Loden, of Colbert, state chairman of health films, told of plans to show health films in all counties of the state. Members were guests of the doctors of the second district at a banquet.

The Woman's Auxiliary to the Ninth District Medical Association met at Canton. Mrs. H. G. Banister, of Ila, president of the Woman's Auxiliary to the Medical Association of Georgia, discussed the work to be undertaken during the year. It was reported that Gwinnett County had recently organized an auxiliary, the district now having seven counties organized, others being Jackson, Barrow, Habersham, Stephens, Cherokee and Pickens. The feature of the program was an illustrated lecture by Dr. Hugh Hailey, of Atlanta, on "Inflammation of the Skin Caused by Cosmetics."

Dr. Milford B. Hatcher talked on appendicitis at a recent meeting of the Woman's Auxiliary to the Bibb County Medical Society.

Illinois

The Woman's Auxiliary to the Chicago Medical Society held its annual "Public Relations Day" meeting, Wednesday, November 6, at the American Medical Association Building. Mrs. W. C. Bornemeier, president; Mrs. H. P. Jenkins, public relations chairman, and Mrs. John Soukup, program chairman, conducted the meeting. Three hundred members and guests representing the Federated Women's Clubs, Parent Teachers' Association and League of Women Voters attended. Dr. Morris Fishbein, Editor of THE JOURNAL, addressed the group on current topics of interest. After discussing the activities of the American Medical Association, he told of some of the fallacies of socialized medicine and pointed out the great interest which has been developed among lay organizations concerning this problem.

A staff of well informed guides then conducted the tour of the building, which ended in the dining room where tea was served. Envelops containing a copy of *Hygeia*, the booklet "Priceless Heritage," circulars concerning the women's field army and their drive for the control of cancer and a list of services offered lay organizations by the Educational Committee of the Illinois State Medical Society were distributed to the guests.

The Adams County medical auxiliary met, November 12, in Quincy with Mrs. J. F. Ross, the president, presiding. In the absence of Dr. R. A. Harris, Mrs. Harris read his paper, which dealt with some phases of the history of medicine, with emphasis on anesthesia. The November issue of *Hygeia* was reviewed and discussed.

The Peoria County auxiliary met at the Peoria Municipal Tuberculosis Sanitarium, November 12, with thirty-five members present. A tour of the institution was followed by a dinner. After the business meeting, Miss Zoe Velde, secretary of the Peoria tuberculosis Christmas seal sale, gave a short talk, and Dr. Max Pollak spoke on the Peoria Municipal Tuberculosis Sanitarium.

The woman's auxiliary to the north side branch of the Cook County Medical Society met in November at the Y. W. C. A. at Oak and Dearborn streets. Mrs. Harry Dooley discussed *Hygeia* and the "Benevolence Fund"; $125 was voted for *Hygeia* subscriptions.

The Irving Park branch was addressed by Dr. W. W. Bauer, director of the Bureau of Health Education of the American Medical Association, on *Hygeia*. Mrs. W. J. Wanninger, national Hygeia chairman, Mrs. E. M. Egan, state chairman, and Mrs. C. R. Landis, county chairman, conducted a round table discussion on *Hygeia*.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News.—The Northwestern Division of the Medical Association of the State of Alabama was addressed at a meeting in Athens, January 9, by Drs. Wilbur M. Salter, Anniston, on "Training Children in Happiness Habits and Hygiene"; Robert B. Dodson, Cullman, "Anemia"; Alva A. Jackson, Florence, "Conservative Treatment of Gallbladder Disease"; Benjamin F. Morton, Birmingham, "The Problem of the So-Called Neurotic Patient," and Gilbert E. Fisher, Birmingham, "Carcinoma of the Lung."——Dr. James P. Collier, Tuscaloosa, discussed "Peripheral Vascular Diseases" before the Walker County Medical Society on January 10.

Two and a Quarter Million Dollar Hospital Dedicated.—The new Jefferson Hospital, Birmingham, erected at a cost of $2,250,000, was dedicated on December 29, following a three day "open house." The building, financed by government funds under PWA control, is sixteen stories high with a capacity for 575 patients. In addition there are a nursery and quarters for nurses and interns. The fifth floor is exclusively for maternity patients; the seventh floor is given over to eleven operating rooms and laboratories. One floor is designed for communicable diseases and divided into three separate and complete units. The fifteenth and sixteenth floors contain living quarters for one hundred and fifty nurses and twenty-five interns and resident doctors.

CALIFORNIA

Bust of Hippocrates Given to School.—A bust of Hippocrates has been presented to the division of medical history and bibliography, University of California Medical School, San Francisco, by Dr. Pan S. Codellas and other members of the Greek colony of the city. Formal presentation was made recently at exercises commemorating the birth of Hippocrates, at which Dean Emeritus Langley Porter presided. The speakers were Drs. William Dock and Frederick L. Reichert of Stanford University School of Medicine, and Drs. Codellas, William J. Kerr, John B. de C. M. Saunders, Salvatore P. Lucia and Chauncey D. Leake, Ph.D., of the California faculty. The bust has been placed in the Crummer Room, where the university's collection on medical history is housed.

Cardiac Convalescent Home.—A group of buildings in the San Fernando Valley near Los Angeles, known as the Mother Cabrini Villa, has been converted into a cardiac convalescent home for girls. The institution, which has a capacity of one hundred, was formerly a "preventorium" for girls between 5 and 15 years of age. The building was erected by the Missionary Sisters of the Sacred Heart in 1920. The change in the type of care was brought about by requests from physicians, and others of southern California, according to the *Bulletin* of the American Heart Association. The girls are accepted regardless of race or creed. The activities of each child are supervised by qualified graduate nurses. Entrance requirements necessitate only that girls with heart disease or potential heart disease between the ages of 5 and 16 years be admitted. Duration of residence will be limited only by the age limit. Admission examination to determine classification is conducted at selected clinics in Los Angeles County. The new convalescent home is partially financed by the Los Angeles Community Chest and because of this the maximum rate for all care of a child while a resident is $35 a month. At present the California Heart Association is making a survey of rheumatic fever in the state, and the development of convalescent institutions is a part of its major program.

COLORADO

Society News.—Dr. George M. Myers, Pueblo, discussed "Renal Calculi" before the Otero County Medical Society, La Junta, December 12.——The Pueblo County Medical Society was addressed, December 17, on "Current National Activities of Organized Medicine" by Dr. Guy C. Cary, Grand Junction, president-elect, Colorado State Medical Society.——The Colorado Neurological Society was addressed in Pueblo, January 25, by Drs. Thad P. Sears, Denver, on "Carbon Monoxide Psychosis, with Presentation of a Case"; Irvin I. Schatz, Pueblo, "Personal Experiences with Brain Abscesses," and Carl Schwer, Pueblo, "Undiagnosed Psychosis with Somatic Background."

GEORGIA

The L. C. Fischer Awards.—The Fulton County Medical Society announces that the Dr. L. C. Fischer Award for the best original work has been given this year to Dr. Fred F. Rudder, Atlanta. His subject was "A New Apparatus for Administering Intravenous Anesthetic Agents." The award for the best written paper went to Drs. Thomas S. Claiborne and Bernard P. Wolff for their work on "Rheumatic Heart Disease: Post Mortem Studies in Atlanta."

Changes in Health Officers.—Dr. Charles O. Rainey, Camilla, is on leave of absence from the Mitchell County Board of Health to accept a temporary position as area medical officer of the extracantonment area for Camp Stewart at Hinesville.——Dr. Irving E. Simmons, formerly director of the Nassau County Health Department in Fernandina, Fla., is the new health officer in Coffee County, with headquarters in Douglas.

ILLINOIS

Society News.—The Macoupin County Medical Society was addressed in Carlinville, January 27, by Drs. G. Henry Mundt, Chicago, on "Ophthalmology in General Practice" and Robinson Bosworth, East St. Louis, "Care and Control of Tuberculosis."——Dr. Frederick M. F. Meixner, Peoria, discussed "Influenza and Respiratory Infections" at a meeting of physicians of Schuyler and Cass counties in Beardstown, January 8.

Chicago

Hospital News.—Dr. Jacob P. Greenhill has been appointed attending physician (office service in obstetrics and gynecology) at Michael Reese Hospital. Promotions on the staff include those of Drs. John S. Coulter to senior attending physician in physical therapy and William H. G. Logan to senior attending surgeon in oral surgery.

Personal.—Dr. John Chornyak, psychiatrist for the Juvenile Court of Pittsburgh, has been chosen medical director of the Illinois Society for Mental Hygiene. He fills the vacancy that occurred in April 1940 when Dr. Conrad S. Sommer became superintendent of the division of mental hospitals in the Illinois Department of Public Welfare.

Society News.—Members of the staff of Evanston Hospital will present the program of the clinical section of the Chicago Heart Association February 20. Among others, Dr. Jay M. Garner, Winnetka, will speak on "Acute Pericarditis with Effusion and Response to Chemotherapy."

Branch Meetings.—The Jackson Park Branch of the Chicago Medical Society was addressed, January 16, by Drs. Ludvig Hektoen on "The Federal Cancer Program" and Bowman C. Crowell, "Influence of Cancer Clinics in Cancer Control."——Dr. Archibald L. Hoyne discussed "Importance of Observation in Diagnosis" before the West Side Branch on January 16.—A surgical symposium on "when not to operate" was presented before the Calumet Branch January 17, by Drs. Harry E. Mock, Lindon Seed and Channing W. Barrett.——The Northwest Branch was addressed by Drs. Francis E. Senear and Robert W. Keeton, February 14, on "Dermatology in Internal Medicine" and "Office Management of Diabetes" respectively.——Dr. Maurice I. Kaplan addressed the Douglas Park Branch, January 21, on "Radiation Therapy of Acute Infection with Special Reference to Osteomyelitis of the Digits."——The North Side Branch was addressed, February 6, by Dr. Russell L. Cecil, New York, on "Recent Advances in the Chemotherapy of Pneumonia."

INDIANA

Clinic Honors Physicians and Observes Anniversary.—The South Bend Clinic, South Bend, observed its twenty-fifth anniversary, January 8, at a dinner in the Hotel LaSalle and honored Drs. Walter H. Baker and Fred R. Clapp, the two remaining original partners of the institution. The clinic was established on Jan. 1, 1916.

State Medical Board.—The following officers of the Indiana State Board of Medical Registration and Examination were reelected at a recent meeting: Drs. Jacob T. Oliphant, Farmersburg, president; Norris E. Harold, Indianapolis, vice

president; Jesse W. Bowers, Fort Wayne, secretary, and William C. Moore, Muncie, treasurer.

Society News.—The Indiana Association for the History of Medicine met jointly with the Indiana History Society in Indianapolis, December 14, at the Indiana State Library. The speakers included Mrs. Olga S. Goldman, Indianapolis, "Biography of Dr. John S. Bobbs"; Dr. Edgar F. Kiser, Indianapolis, "Amos Twitchell's Copy of 'Beaumont's Physiology of Digestion'," and Dr. Emmet F. Horine, Louisville, Ky., "Daniel Drake and His Contributions to Education."——The Indianapolis Medical Society was addressed January 23 by Drs. Arthur B. Richter on "Patent Ductus Arteriosus—Its Diagnosis and Indication for Surgical Treatment," and Calvin B. Fausset, "Elective Surgery of the Heart and Pericardium." The society devoted its meeting January 21 to a symposium on gynecology and January 14 to one on arthritis.

IOWA

Postgraduate Courses.—The speakers' bureau of the Iowa State Medical Society announces postgraduate medical courses now being conducted throughout the state in cooperation with local medical societies. The Marshall County Medical Society opened its course on January 7, the Boone and Story county medical societies on January 31. The course for the physicians of the Dickinson, Emmet and Clay county medical societies and vicinity will open in Spirit Lake on February 18 with Iowa physicians as the speakers. Out-of-state speakers will conduct the courses in Marshall, Boone and Story counties. Sessions will be held once a month over an eight or nine month period. A series of weekly postgraduate medical lectures is now being planned for the Poweshiek County Medical Society, to be given in October.

LOUISIANA

Personal.—Dr. Robert W. Faulk, Monroe, was guest of honor at the annual banquet of the Ouachita Parish Medical Society in recognition of his more than fifty years service as a physician in the community. He was presented with a plaque as a memento of the occasion.

Changes in Health Units.—Dr. John G. Norris, Farmerville, has retired from active practice to take charge of the Union Parish health unit, a position he formerly held.—— Dr. Charles W. Reid, Coushatta, has been appointed director of the Red River Parish health unit.

Health Association Changes Name.—The Louisiana Association of Health Officers changed its name to the Louisiana Public Health Association during the annual session in New Orleans, December 11. Officers elected at this meeting include Dr. William W. Knipmeyer, Natchitoches, president, succeeding Dr. Christopher L. Mengis, New Iberia, and Dr. Reuben Alec Brown, New Orleans, secretary-treasurer.

MAINE

Society News.—Dr. James W. Toumey, Boston, discussed "Various Conditions Causing Low Back Pain" before the Cumberland County Medical Society, December 20.—— The Kennebec County Medical Association was addressed in Augusta, December 19, by Dr. Albert Warren Stearns, Boston, on "Hypochondria and Hysteria, a Historical Study of the Evolution of Functional Nervous Disease."——Dr. Charles H. Lawrence, Boston, addressed the Penobscot County Medical Association in Bangor, December 17, on "Adolescent Menstrual Disturbances, Their Significance, Diagnosis and Treatment."

MASSACHUSETTS

Dr. Holmes Made Professor Emeritus.—Dr. George W. Holmes, clinical professor of roentgenology, Harvard Medical School, and chief roentgenologist at Massachusetts General Hospital, Boston, will become professor emeritus, September 1, according to an announcement from the university. Dr. Holmes has been a member of the staff of Harvard since 1916 as instructor in roentgenology, 1916-1923; assistant professor, 1923-1931, and clinical professor since 1931. He has been a member of the staff of Massachusetts General Hospital since 1911 and chief roentgenologist since 1917. He was president of the American Roentgen Ray Society in 1924 and has been a director of the American Society for the Control of Cancer since 1936. He has been a member of the National Research Council since 1927. He graduated at Tufts College Medical School, Boston, in 1906.

MICHIGAN

Dr. Slemons Returns as Health Officer of Grand Rapids.—Dr. Clyde C. Slemons, health commissioner of Grand Rapids from 1910 to 1930, has returned to serve in this position, succeeding Dr. John L. Lavan. A native of Cedar Springs, Dr. Slemons graduated at the Detroit College of Medicine and Surgery in 1905. He served as state health commissioner from 1930 to 1938. He was president of the International Society of Medical Health Officers in 1937. Dr. Lavan resigned to take charge of health activities in Toledo, Ohio.

Michigan Participates in Youth Health Program.—At a meeting on January 12 the council of the Michigan State Medical Society approved the program of the National Youth Administration with respect to the medical care of out-of-school youth. All young men and women of ages from 16 to 24, out of school and unemployed, may through the Michigan State Employment Service be referred to the NYA for work experience. The hours of service are sixty a month and the rate of compensation to the youth is a minimum of $18 a month, available in work projects. As the health program is a part of the national defense movement the government is requiring a careful physical examination, utilizing a medical examination blank which will be used throughout the forty-eight states. Units of forty youths now being trained are examined each day by teams nominated by county medical societies, made up of two internists, an eye, ear, nose and throat specialist, a dentist and necessary nursing assistance. All youths are to have a Kahn test, a roentgenogram of the chest and a urinalysis for sugar and albumin. About twelve minutes is allowed every youth for each examination. With two exceptions, the defects found are, in general, referred to the family physician for correction. In the Detroit area all dental defects, positive Kahn tests and diagnosed cases of tuberculosis are referred to the Wayne County Medical Society Medico-Dental Commission or the city board of health. As the visual defects will number only five to eight on an average in this group, it was thought desirable that the specialist prescribe simple lenses for the visual correction. However, any pathologic condition that may be discovered will be referred through the family physician to the proper agency or specialist. The rate for this unit examination has been fixed at $25 for each physician for a day's service, the hours varying from six to eight each day. In the areas where the volume of work does not warrant a unit examination the work will be done, in the main, in the private physician's office with fees varying from $3 per examination to a proportionate part of the per diem rate. Dr. Bernard W. Carey, Detroit, health consultant to the NYA, points out that, if good medical practices are instilled into the youth now, those needing medical service when on a self-supporting basis will obtain it at the regular established fee.

MISSISSIPPI

Personal.—Dr. Clyde M. Speck, New Albany, has been appointed assistant superintendent of the Mississippi State Hospital at Whitfield, succeeding Dr. Frank A. Donaldson, who resigned to become superintendent of the East Louisiana State Hospital, Jackson.—— Dr. Thomas L. Owings, health officer of Pearl River County, with offices in Poplarville, has been appointed to a similar position in Lafayette County, succeeding Dr. Murphy M. Sims, Oxford, who has gone into military service.

Regional Fracture Meeting.—Dr. Charles L. Scudder, Boston, addressed a meeting at the LaMar Hotel, Meridian, January 7, on "The Fracture Committee of Mississippi" and "The Nucleus Pulposus Backache." An executive committee has been appointed to act for the state committee in promoting plans for improving the fracture services of the hospitals, to disseminate knowledge of methods of treatment of fractures to the physicians in the state and to provide more adequately for first aid and transportation of the injured.

Public Health Election.—Dr. Richard N. Whitfield, Jackson, director of the division of vital statistics, state board of health, was chosen president-elect of the Mississippi Public Health Association at its annual meeting in Jackson, December 13. Miss Opal Regan, Meridian, was installed as president and Dr. William H. Cleveland, Tupelo, retiring president of the association, became vice president. Dr. Calvin C. Applewhite, formerly health officer of Hinds County and now with the U. S. Public Health Service, was elected an honorary member at this meeting.

NEW YORK

Personal.—Dr. Harry Beckett Lang, superintendent of the Buffalo State Hospital, has been appointed assistant commissioner of the state department of mental hygiene.——Dr. Harwood L. Hollis, Lacona, has been appointed superintendent of the Oswego County Sanatorium, Richland, to succeed his father, Dr. Leroy F. Hollis, who recently resigned after serving for twenty-two years.

Society News.—Dr. Currier McEwen, New York, discussed "Diagnosis and Treatment of Arthritis" before the Dutchess County Medical Society, Poughkeepsie, January 8. Dr. Walter D. Ludlum Jr., New York, addressed the society, December 11, on "Recognition and Treatment of Hernia."——Dr. Loring T. Swaim, Boston, addressed the Medical Society of the County of Westchester, White Plains, January 21, on the treatment of chronic arthritis.

Hospital News.—The William Henry Hall Memorial, a new $125,000 division of the St. Agnes Hospital for crippled children, White Plains, was dedicated by Archbishop Spellman on December 15. The new building is a gift from the Hall Foundation, established in 1936 by the will of Miss Martha M. Hall, daughter of William Henry Hall, a manufacturing chemist of New York. It will accommodate forty-eight boys and is equipped with a brace shop, gymnasium, occupational therapy room, two wards, isolation room, playroom, library and physical therapy department.

New York City

Dr. George Vincent Dies.—George E. Vincent, Ph.D., former president of the Rockefeller Foundation, died in the Columbia-Presbyterian Medical Center, February 1, aged 76. Dr. Vincent was born in Rockford, Ill., March 21, 1864, and after graduating from Yale University in 1885 took the degree of doctor of philosophy at the University of Chicago in 1896. He was president of the Chautauqua Institution, Chautauqua, N. Y., from 1907 to 1915 and honorary president from 1915 to 1937. Dr. Vincent was widely known as a public speaker and lecturer. He began teaching at the University of Chicago as a fellow in sociology and remained there until 1911, when he left the position of dean of the faculties of arts, literature and science to become president of the University of Minnesota, Minneapolis. In 1917 he resigned from Minnesota to take the presidency of the Rockefeller Foundation, which he held until his retirement in 1929. He was a member of the General Education Board from 1914 to 1929.

The City's Health.—New York had record low death rates for infant and puerperal mortality, pulmonary tuberculosis, diphtheria, pneumonia and typhoid, according to the annual report of Dr. John L. Rice, commissioner of health. The number of deaths from all causes was 76,008, giving a general death rate of 10.3 per thousand of population. The infant mortality rate decreased from 37.1 in 1939 to 34.9 in 1940, and the puerperal death rate decreased in the past five years from 5.2 per thousand live births in 1935 to 3 in 1940. The rate for diphtheria was 0.7 deaths per hundred thousand children under 15 years of age. Of thirty health center districts, six had no deaths from diphtheria. The pneumonia mortality dropped from 57.6 per hundred thousand in 1939 to 46.1 in 1940. Tuberculosis caused a rate of 49, which was a decrease from 52 in 1939 and the lowest rate ever reported. Scarlet fever and measles were twice as prevalent in 1940 as in the preceding year, but there were few deaths. For whooping cough, fewer cases were reported but more deaths. The number of cases of poliomyelitis was unusually small, 67 with 5 deaths. Similarly epidemic meningitis caused fewer cases and deaths than for many years, 48 cases with 15 deaths, a result partly credited to chemotherapy. The report directs attention to appendicitis, for which the death rate declined slightly. There were, however, 677 deaths, over 7 per cent of which were in children under 5 years old. This constitutes a serious public health problem, the report points out. With the progressive aging of the city's population, chronic diseases of later life are assuming greater importance. The death rates for diabetes, cancer and diseases of the heart, arteries and kidneys and apoplexy have steadily climbed higher during the last ten years. For 1940 the rates per hundred thousand were: diabetes 42, cancer 166.3 and diseases of the heart and related conditions 473.3. The suicide rate was slightly larger than it has been in the past five years, 1,229 deaths and a rate of 16.6. The high point of recent years was a rate of 22.7 in 1932. Deaths from accidents decreased slightly, from 53.2 per hundred thousand in 1939 to 51.9 in 1940. The birth rate was 14.5 per thousand of population, the highest since 1933, when it was 14.6.

NORTH CAROLINA

Professors Appointed to Bowman Gray School.—Appointment of three new members of the faculty of the Bowman Gray School of Medicine of Wake Forest College, to open in Winston-Salem next fall, has been announced. Dr. Tinsley R. Harrison, associate professor of medicine, Vanderbilt University School of Medicine, Nashville, Tenn., has been appointed professor of medicine. Dr. Wingate M. Johnson, Winston-Salem, will be professor of clinical medicine and Dr. A. deTalma Valk, Winston-Salem, professor of clinical surgery. Dr. Harrison, a graduate of the Johns Hopkins University School of Medicine, Baltimore, in 1922, has been associated with Vanderbilt since 1925. Dr. Johnson graduated from Jefferson Medical College in 1908 and has practiced in Winston-Salem for many years. He is editor of the *North Carolina Medical Journal*. He has been on the board of trustees of Wake Forest College for twenty years and is now president of the board. Dr. Valk, a graduate from Johns Hopkins in 1910, is chief of the surgical staff of the North Carolina Baptist Hospital, Winston-Salem.

OHIO

New Society of Neurology and Psychiatry.—The Cincinnati Society of Neurology and Psychiatry was recently organized with Drs. Thomas A. Ratliff as president; Erl Armitage Baber, vice president, and Charles D. Aring, secretary. At the first scientific meeting, January 23, Dr. Aring presented a paper on "Infectious Polyneuritis."

Cleveland Health Lectures on Defense.—The annual series of free public health lectures sponsored by the Academy of Medicine of Cleveland will have as their general theme "Health in Defense." For the first session the subject will be "The Family in War Time," with Dr. William M. Champion speaking on "The Child" and Dr. Harry D. Piercy on "The Adult." Dr. George F. Sykes will give the second lecture on "The Worker in War Time," March 23, and Lieut. Col. Edgar Erskine Hume, U. S. Army Medical Corps, Carlisle Barracks, Pa., will deliver the third, April 6, on "The Soldier."

PENNSYLVANIA

Society News.—Dr. David E. Hemington, Uniontown, addressed the Fayette County Medical Society, Uniontown, February 6, on "Industrial Medicine and National Defense."——Dr. Paul Titus, Pittsburgh, addressed the Washington County Medical Society, Washington, February 12, on "Human Sterility."——Dr. William F. Petersen, Chicago, was the guest speaker at the annual combined meeting of the McKeesport Academy of Medicine and the Valley Medical Society in McKeesport, January 27, on "Weather and the Practice of Medicine."

Philadelphia

Medicolegal Night.—The Philadelphia County Medical Society devoted its February 12 meeting to "The Crime Problem—New Concepts and Contributions." The speakers were William Draper Lewis, Ph.D., director of the American Law Institute, on "The American Law Institute's Youth Correction Authority Act" and Dr. Foster Kennedy, New York, "The Psychiatrist's Responsibility to the Criminally Insane and to Society." Commentators were the Hon. James Gay Gordon Jr., president-judge, common pleas court No. 2, and Dr. Edward A. Strecker. Members of the judiciary and the bar association were guests at the meeting.

Pittsburgh

Personal.—Homer Saint-Gaudens, for the last twenty years director of fine arts at Carnegie Institute in Pittsburgh, is now on active duty in the Corps of Engineers and as technical advisor on camouflage studies being conducted in the office of the Chief of Engineers in Washington, D. C. Colonel Saint-Gaudens is the son of Augustus Saint-Gaudens, the great Irish-American sculptor; he served in the first World War with the first camouflage unit and was in charge of camouflage on the front of the second camouflage division.

Society News.—Speakers at a meeting of the Pittsburgh Surgical Society, January 24, were Drs. Edward J. McCague on "Traumatic Injuries of the Genito-Urinary Tract"; Grover C. Weil, Harold W. Rusbridge and Darrell W. Whitaker, "Treatment of Compound Wounds and Surgical Infections by the Local Implantations of Sulfathiazole, with Special Reference to Compound Fractures," and Stuart N. Rowe, "Neurosurgical Treatment of Certain Types of Low Back Pain."

TENNESSEE

Plans for Psychiatric Hospital.—Plans for a diagnostic clinic and psychiatric hospital as an addition to the John Gaston Hospital, Memphis, teaching hospital of the University of Tennessee College of Medicine, have been announced. The new building will have six floors, four to be used as an outpatient department for the John Gaston Hospital and two for a fifty bed psychiatric hospital. It will cost about $450,000. All patients admitted to the Western State Hospital, Bolivar, will enter the psychiatric hospital for diagnosis and classification, and selected cases will be kept there for treatment for instructional purposes. Medical students will be rotated through the psychiatric hospital as in other departments.

TEXAS

Special Society Meeting.—Dr. Everett L. Goar, Houston, was elected president of the Texas Ophthalmological and Otolaryngological Society at its annual meeting in Fort Worth in December. Drs. Burbank P. Woodson, Temple, and Phocian W. Malone, Big Spring, were elected vice presidents and Dr. Daniel Brannin, Dallas, was reelected secretary. The guest speakers were Drs. Samuel J. Kopetzky, New York, on management of otitis and Peter C. Kronfeld, Chicago, early diagnosis of glaucoma.

Clinical Assembly in San Antonio.—The International Postgraduate Medical Assembly of South Texas held its ninth annual clinical meeting in San Antonio, January 28-30. The lecturers were Drs. Horton R. Casparis and Tinsley R. Harrison, Nashville, Tenn.; William H. Crisp and Franklin G. Ebaugh, Denver; Temple S. Fay, Philadelphia; Walter A. Fansler, Minneapolis; Bernard H. Nichols and Roy W. Scott, Cleveland; Francisco de P. Miranda, Mexico City; Thomas B. Sellers, New Orleans; John A. C. Colston, Baltimore; Roy D. McClure, Detroit; John R. Page and Arthur Purdy Stout, New York; Francis M. Rackemann, Boston; John C. Wilson, Los Angeles, and Major Samuel F. Seeley, Fort Sam Houston, Texas.

UTAH

Society News.—The Carbon County Medical Society was addressed in Price City, December 11, by Dr. Thomas F. Welsh, Salt Lake City, on "Otitis Media, Complications and Treatment."

VIRGINIA

Annual Course in Ophthalmology and Otolaryngology.—The fifteenth annual spring graduate course will be presented by the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, April 7-12. Guests who will conduct clinics include Drs. Alfred Cowan and Robert A. Groff, Philadelphia; James H. Maxwell, Ann Arbor, Mich.; Paul M. Moore Jr. and Albert D. Ruedemann, Cleveland; Raymond E. Meek, Algernon B. Reese, Clarence R. Straatsma and Arno E. Town, New York; Carleton Stewart Nash, Rochester, N. Y.; Leroy A. Schall and Theodore L. Terry, Boston; Warren T. Vaughan, Richmond, and Frank B. Walsh, Baltimore.

Society News.—Dr. Bayard T. Horton, Rochester, Minn., addressed the Neuropsychiatric Society of Virginia at a meeting in Charlottesville recently on "A New Syndrome of Vascular Headache: Results of Treatment with Histamine."—Speakers at a meeting of the Fourth District and Southside Virginia Medical Society in Petersburg, December 27, included Drs. Ramsay Spillman, New York, on "What Every Physician Should Know About the Spread and Prevention of Tuberculosis"; Thomas Duckett Jones, Boston, "New and Interesting Phases of Rheumatic Fever"; William B. McIlwaine III, Petersburg, "Sulfathiazole and Allied Types of Chemotherapy in Children," and Claude C. Coleman, Richmond, "Signs and Symptoms of Brain Tumors That Should be Familiar to Every Physician."—The Roanoke Academy of Medicine held a special meeting February 3 with Drs. Herbert F. Traut, New York, and Joseph Earle Moore, Baltimore, as the speakers on "Upper Urinary Tract Infection Complicating Pregnancy" and "Venereal Disease Control in the Armed Forces" respectively.

WISCONSIN

Lakeside Laboratories Expand.—Drs. Elmer L. Sevringhaus, Madison, and Eugene F. Traut, Chicago, were the speakers at a meeting on December 28 marking the opening of a new building of the Lakeside Laboratories, Milwaukee. Dr. Sevringhaus discussed "Clinical Endocrinology" and Dr. Traut "Treatment of Arthritis." The new addition doubles the space previously occupied by the firm.

Lippitt Memorial Lecture.—Dr. Lee E. Farr, director of research, DuPont Institute, Wilmington, Del., delivered the sixth annual Lippitt Memorial Lecture, January 17, at the Marquette University School of Medicine, Milwaukee. His subject was "The Role of Diet in the Therapy of Nephritis." The lecture honors the late Dr. S. Herman Lippitt, associate clinical professor of pediatrics at the university for many years before his death in 1934 and for ten years on the staff of Mount Sinai Hospital.

GENERAL

Grants Available for Infantile Paralysis Research.—The National Foundation for Infantile Paralysis will hold a semiannual meeting of its medical committees on May 15 to consider grants for study of the cause, prevention and treatment of infantile paralysis. Applications must be received on or before March 15 at the office of the foundation, 120 Broadway, New York.

American Diabetes Association.—A new organization known as the American Diabetes Association, Inc., has been formed, and committees are now at work on membership and program. The officers of the new organization are Drs. Cecil Striker, Cincinnati, president; Herman O. Mosenthal, New York, and Joseph T. Beardwood Jr., Philadelphia, vice presidents; Samuel S. Altshuler, Detroit, secretary; William Muhlberg, Cincinnati, treasurer. The honorary president is Dr. Elliott P. Joslin, Boston, and the honorary members are Drs. Frederick G. Banting and Charles H. Best, Toronto. The board of trustees comprises thirteen well known physicians from various cities.

"Pan American Union Against Cancer" Not Known.—The Pan American Sanitary Bureau recently issued the following statement: "It has come to the notice of the Pan American Sanitary Bureau that some one (not a physician) has been trying to organize a Pan American Union Against Cancer. An inquiry has elicited from Dr. Ludvig Hektoen, executive director of the National Advisory Cancer Council of the United States, the information that the National Cancer Institute is not in any way associated with this project and that no other governmental agency is supporting it to date, nor, so far as is known, is the American Society for the Control of Cancer."

Legislation for Control of Fireworks.—The National Fire Protection Association Model State Fireworks Law has been introduced in the following states:

Kansas: House bill 65, referred to Committee on State Affairs.
Minnesota: House bill 47, referred to General Legislative Committee.
Massachusetts: House bill 1651, referred to Committee on Military Affairs and Public Safety.
Ohio: House bill 12.
North Carolina: A senate bill, referred to Committee on Propositions and Grievances. (This bill was introduced by Senator D. M. Stringfield.)
Maryland: House bill 29, referred to Judiciary Committee.

This legislation is planned to control unnecessary hazard to health and property from the use of fireworks under uncontrolled conditions.

Orthopsychiatric Meeting.—The American Orthopsychiatric Association will hold its eighteenth annual meeting at the Hotel Pennsylvania, New York, February 20-23, under the presidency of Dr. Paul L. Schroeder, Chicago. The program will open with a symposium on "What Can Psychiatry Contribute to the Alleviation of National and International Difficulties?" A luncheon round table on pediatrics and child psychiatry will follow. There will be another symposium on "Direct Psychotherapy in Adolescence" and special sessions devoted to cultural psychology, psychopathology of childhood and youth, therapy, case work and the case worker, education and school, family and foster home and prevention. Dr. Schroeder will deliver his presidential address at the annual dinner on Friday evening.

Special Society Elections.—Dr. Carl E. Badgley, Ann Arbor, Mich., was chosen president-elect of the American Academy of Orthopaedic Surgeons at its annual meeting in New Orleans, January 16, and Dr. Oscar L. Miller, Charlotte, N. C., was inducted into the presidency. Other officers are Drs. Herman C. Schumm, Milwaukee, vice president; Eugene Bishop Mumford, Indianapolis, treasurer, reelected, and Rexford L. Diveley, Kansas City, Mo., secretary.—Dr. Ernest W. Goodpasture, Nashville, Tenn., was elected a vice president of the American Association for the Advancement of Science and chairman of the section on medical sciences (N) at the annual midwinter meeting in Philadelphia.—Dr. Oswald T. Avery, New York, was elected president of the Society of American Bacteriologists at the annual meeting in St. Louis in December.

Fellowships in Child Psychiatry.—The National Committee for Mental Hygiene announces that a limited number of fellowships for training in extramural psychiatry, especially child psychiatry, have been provided by the Commonwealth Fund and other sources. Fellows are to be assigned through the committee for one or two years to a selected child guidance clinic, the term and plan of the fellowship to be determined by the peculiar needs of the fellows. Candidates for fellowship awards should have at least two years of psychiatry in an approved mental hospital, in addition to other qualities fitting them for extramural service. Other conditions such as age, sex and marital status will be governed by individual cases and by the nature of the demand. Requests for applications for fellowships should be addressed to Dr. Milton E. Kirkpatrick, National Committee for Mental Hygiene, Room 916, 1790 Broadway, New York.

Examinations by Obstetric Board.—General oral and pathologic examinations (part II) for all candidates (groups A and B) will be conducted by the American Board of Obstetrics and Gynecology at Cleveland May 28 to June 2, inclusive. Application for admission to group A, part II, examinations must be on file in the office of the secretary not later than March 1. Candidates for reexamination in part II must make written application to the secretary's office before April 15. The board states that military service will not affect the eligibility of any candidate as far as the board requirements regarding limitation of practice are concerned. Military service will under no circumstances be considered as an infringement of any regulations outlined in this board's booklet. The board requests that all candidates who plan to submit applications use the new form, which may be obtained from the secretary on request. Address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6).

American Physicians' Art Association.—The secretary of the American Physicians' Art Association, Dr. Francis H. Redewill, 521 Flood Building, San Francisco, requests any physician who has an art piece in any medium that he would like to donate as a trophy to the American Physicians' Art Association to send it properly boxed and shipped express collect to the librarian H. G. Marquez, Ph.D., American Physicians' Art Association, 521 Flood Building, San Francisco. Art pieces donated will be placed on exhibition in the booth of the association in Cleveland, June 2-6, during the annual session of the American Medical Association. Dr. Redewill has sent to members of the American Physicians' Art Association a questionnaire asking for brief information about each member which the association will publish in booklet form; snapshots and other pictures of members at work or play also are requested. The headquarters of the American Physicians' Art Association at the Cleveland meeting will be booth 493 in the technical exhibit of the American Medical Association, a booth which Mead Johnson & Co. has offered the art association.

Pacific Coast Surgical Association.—The sixteenth annual meeting of the Pacific Coast Surgical Association will be held at the Ambassador Hotel, Los Angeles, February 19 under the presidency of Dr. Charles T. Sturgeon, Los Angeles, whose subject will be "The Surgical Management of Chronic Duodenal Ulcer." Other speakers will be:

Dr. Henry H. Searls, San Francisco, A Family with Hemolytic Icterus.
Dr. William K. Livingston, Portland, Ore., Back Disabilities Due to Strain of the Multifidus Muscle Treated by Novocain Injections.
Drs. Leroy C. Abbott, John B. de C. M. Saunders and Carl E. Anderson, San Francisco, Injuries to the Ligaments of the Knee.
Dr. Thomas F. Mullen, San Francisco, The Urologic Complications of Carcinoma of the Rectum.
Dr. George K. Rhodes, San Francisco, Observations on Acute Pancreatitis with Blood Amylase Studies.
Dr. John Homer Woolsey, Woodland, Calif., The Problem of the Common Duct Stone.
Dr. Robert D. Forbes, Seattle, Secondary Operations on the Biliary System.
Dr. Emile F. Holman, San Francisco, Aseptic Technic for Resection of the Stomach.
Drs. Samuel Robinson and Leigh Gordon Fiske, Santa Barbara, Calif., An Instrument for Retraction of Viscera During Peritoneoscopy.
Dr. Brien T. King, Seattle, Further Observations on an Operation for the Relief of Bilateral Abductor Cord Paralysis.
Dr. Herbert S. Chapman, Stockton, Calif., Hyperparathyroidism.
Dr. Raymond E. Watkins, Portland, Ore., Carcinoma of the Cervical Stump Following Hysterectomy.
Dr. Otis F. Lamson, Seattle, An Appliance for Colostomy Control.

College of Physicians Offers Postgraduate Courses.—For the fourth year the American College of Physicians has arranged a series of postgraduate courses in cooperation with various institutions. The courses vary in length from one to three weeks and are offered primarily for fellows and associates of the college, but where facilities are available they are open to physicians preparing either to meet the requirements for membership in the college or for the examinations of the American Board of Internal Medicine. During February courses are being given as follows: allergy, Washington University School of Medicine, St. Louis, under the direction of Dr. Harry L. Alexander; allergy, Roosevelt Hospital, New York, under Dr. Robert A. Cooke, and gastrointestinal diseases, Mayo Foundation and Mayo Clinic, Rochester, Minn., under Dr. Edgar V. Allen. Future courses are announced as follows:

General medicine, Harvard Medical School, Boston, March 31 to April 18, under Drs. James H. Means, George R. Minot, Soma Weiss and Robert T. Monroe.
Allergy, Massachusetts General Hospital, Boston, April 10-18, under Dr. Francis M. Rackemann.
Gastroenterology, Robert Dawson Evans Memorial, Massachusetts Memorial Hospitals, Boston University, April 14-19, under Dr. Chester S. Keefer.
General medicine, University of Michigan Medical School and University Hospital, Ann Arbor, April 7-19, under Dr. Cyrus C. Sturgis.
Clinical medicine from the hematologic point of view, Ohio State University College of Medicine, Columbus, April 14-19, under Dr. Charles A. Doan.
Cardiovascular disease, University of Pennsylvania School of Medicine and Graduate School of Medicine, Philadelphia, April 7-19, under Dr. William D. Stroud.
Military medicine, U. S. Army Medical Corps, U. S. Navy Medical Corps and U. S. Public Health Service, Washington, D. C., April 7-18, with Dr. Wallace M. Yater as coordinator.

CORRECTIONS

Anorectal Operative Procedures with Special Reference to Avoidance of Pain.—In THE JOURNAL, February 1, page 363, in the discussion of Dr. Arthur S. Calman on the paper by Dr. Harry E. Bacon, two sentences were inadvertently omitted. After the sentence "A suture ligature of number 00 plain catgut, which is absorbed shortly, is then passed around the distal end of the hemorrhoid and ligated" the following two sentences should follow: "The hemorrhoidal mass, composed of vein and periphlebitic areolar tissue, is then dissected out from its bed without sacrificing any mucosa. The two mucosal flaps covering the operative area are not sutured together."

National Emergency and Health Insurance.—In the editorial entitled "The National Emergency as a Pretext for Compulsory Health Insurance" in THE JOURNAL, January 25, there is in the first sentence of the last paragraph on page 310 an erroneous statement with respect to the number of initiative measures that were before the Washington electorate in the November election. Only three such measures were on the ballot and not "a hundred or more," as stated in the editorial. However, the further statements made in discussing initiative measure 141, the so-called Senior Citizens Grants Act, which was approved by the Washington electorate, are correct. The measure does require the state to provide at the expense of the state medical, hospital, dental and nursing care to persons eligible for the senior citizen grants authorized by the measure. And the ballot title of the measure did not indicate to the voter that he was passing on a measure that would provide medical care at the expense of the state to the beneficiaries of the measure.

Government Services

Physicians Needed for CCC Duty

Applications are invited from physicians for medical service in the Civilian Conservation Corps in the Seventh Corps Area, which includes Minnesota, North and South Dakota, Iowa, Nebraska, Missouri, Kansas and Arkansas. The initial salary is $3,200 a year. No quarters for families are provided, and the physicians are required to pay for their own food at the camps. The principal duties consist of the medical care of the enrollees and the practice of preventive medicine. To be eligible for this service, the physician must be a citizen of the United States, a graduate of an accredited medical school authorized to confer the degree of doctor of medicine and physically able to perform the duties involved. All physicians interested in this type of work are requested to submit their applications to the Office of the Surgeon, Seventh Corps Area, Federal Building, Omaha.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 28, 1940.

The Food Situation in Europe

In a previous letter it was shown that the food shortage in Europe, apart from that due to the ravages of war, was the result of plundering of the enslaved peoples by the Germans. Britain's contention that there is no necessity for America to send food ships to German occupied countries, as advocated by Mr. Hoover and others, is confirmed by a report issued by the Berlin Institute for Business Research. This claims that Germany is in a position to guarantee the feeding of every one on the Continent and says that, since exports to England have ceased, foodstuffs produced in Europe provide nourishment for the peoples under the German distribution organization. A list attached to the report gives German stocks and production as 90 per cent of the requirements, southeastern Europe as 110 and other percentages as Denmark 108, Italy 95, France 83, the Netherlands 67 and Belgium 51. No figures are given for Poland or Norway. But reliable reports have reached the British Ministry of Economic Warfare that two million workers brought into Germany from occupied countries are finding their food rations inadequate and that bad feeding has led to disturbances. Referring to Mr. Hoover's efforts in the last war to relieve the food shortage in Germany, Mr. Hugh Dalton, minister of economic warfare, said in a speech "I am afraid that they prolonged the war and cost the lives of many, including American soldiers." He could not see the arguments for Mr. Hoover's latest plan. There was no reason to suppose that there would be any starvation on the Continent unless the Germans willed it. If we did let in food, it would inevitably assist the enemy.

There are signs that the food position in France may become tragic. The Germans have seized about 60 per cent of all the crops in both occupied and unoccupied France. They have taken the pigs and all other supplies of animal fat. The weekly meat ration of 13 ounces includes bones and trimmings, leaving only about 10 ounces of actual meat. To obtain this quantity it is necessary in certain cities to form queues as early as 4 a. m. In the cities there is no butter or suet. Soap is almost unobtainable. Stocks of fruit are rapidly coming to an end; as much as 25 cents is sometimes paid for an apple. The Germans have removed from Normandy and Brittany all the cider apples for the manufacture of some war product of which the nature is not known. The restaurants serve food against ration cards, but the amount is inadequate. German officers eating in restaurants are given the ration cards for three persons and other ranks the cards for two.

The British government has given the International Red Cross Committee at Geneva an assurance that ships carrying parcels for prisoners of war and containing foodstuffs, blankets and underclothing, will be allowed to proceed freely to Europe. The parcels are to be unshipped at Lisbon and transported and distributed by the Red Cross. The British government has also declared itself ready to facilitate the importation into European countries of strictly medical and pharmaceutic products intended for the sick and wounded.

The Danger of Flying Glass in Air Raids

The research and experiments department of the Ministry of Home Security has shown that the danger during air raids from flying glass is considerable. While the fragments have not caused many deaths, they have been responsible for a large proportion of the injuries when the bombs have fallen among houses and also for serious damage to food stocks. The blast of a bomb falling within 200 feet may burst windows and cause a hail of broken glass, driving dagger-like pieces into walls or into cans containing food. Curtains and blinds do little to stop flying glass. Materials pasted on glass have proved effective in preventing glass fragments from flying, though they do not prevent windows from being broken. The cheapest and simplest material to use is cotton or linen fabric pasted all over the glass with paperhanger's paste. Brown paper will do if tough and thick. Windows left open are less likely to suffer from the effects of a blast.

Science and War

In a broadcast Sir William Bragg, lately president of the Royal Society, took for his subject Science and War. He said that the war had been called a scientists' and engineers' war. When people saw the damage it was natural for them to curse scientists and engineers for their devilish inventions. But science was knowledge about the world around us, which scientists were trying to increase. They could not control the use made of inventions. The same knowledge might be used to make drugs which controlled a deadly disease or to make poison gas. We lived in an age in which machines of all kinds were improved rapidly from year to year and the same held for weapons of war.

When war threatened, the Royal Society made a register of our scientists—an action never taken before. The results were interesting. We had about ten thousand scientific researchers, of whom sixteen hundred were chemists, one thousand physicists, five hundred mathematicians and seven hundred zoologists. Fifteen hundred were engaged in medical research. The remaining three or four thousand scientists were employed in the universities and technical colleges. Our trouble was that we had not organized our scientists for war. Apart from a small band in service departments, our scientists were engaged in peaceful occupations, whereas the best German technicians had been drawn in for many years. But fortunately the British were good at improvising in an emergency. He could not give away any secrets, but he could quote from a German source. In his book, Captain Dove, one of the prisoners on the *Graf Spee*, related what Captain Langsdorf of that ship said "We invented the magnetic mine eight years ago and for eight years have been trying to find the antidote without success. Now the British Navy has to start where we began." But the British Navy found the antidote in eight weeks, not eight years.

Sir Arthur Hurst

Sir Arthur Hurst has retired from the active staff of Guy's Hospital, where his great pioneer work in medicine has been done, although his personal teaching will continue in another but related sphere. Owing to the difficulty in carrying out clinical teaching in the London hospitals during the war, it was decided last October to start a clinical school in Oxford for students who, having finished their preclinical course, would under ordinary conditions have gone to London hospitals for their clinical work. Nearly all the students have availed themselves of the opportunity of doing their clinical work in comparatively peaceful surroundings. Sir Arthur Hurst and Prof. George Gask, formerly director of the surgical unit at St. Bartholomew's Hospital, were invited to help the medical and surgical staffs of the Radcliffe Infirmary, Oxford, in their clinical teaching and have been appointed respectively lecturer in clinical medicine and lecturer in clinical surgery of the University of Oxford.

Sir Arthur Hurst has also retired from the editorship of *Guy's Hospital Reports*, and the current number is dedicated to him in commemoration of his work, which is described as follows: "The origin, continuance and great success of the quarterly series during nineteen years have been entirely due to his energy, inspiration and unremitting labor. Between the two European wars they have been a manifestation of Hurst himself." To the *Reports* he has contributed seventy-eight

papers, of which sixty-four appeared during his editorship. Many, such as "The Passage of Food Along the Alimentary Canal," "The Sensibility of the Alimentary Canal" and "The War Neuroses and the Neuroses of Civil Life," have become classic, and all of them have proved valuable and stood the test of time—characteristics of Hurst's work.

He has been not only a great contributor to the *Reports* but an inspiring teacher, leader and editor. Hurst's influence also extends to sixty-one papers written by members of the hospital staff, such as registrars, house physicians and clinical assistants. A feature of Guy's Hospital, perhaps unique in the medical world, is two clinical wards to which cases of special interest are admitted and which is always a center of active research. The appointment as clinical assistant to these wards is one of the oldest nonsurgical clinical appointments in the world and certainly goes back one hundred years. Every three months, six senior students are appointed to these wards. Most of the cases quoted by Bright and Addison in their classic works were written by "clinicals." As these two famous Guy's physicians have been mentioned, a third, Hodgkins, may be added, as all three have passed into history in eponyms. A valuable feature of the present series of the *Reports* is seven yearly publications of "Cases from Clinical." It was in 1836 that *Guy's Hospital Reports* first appeared as a yearly volume, and it was continued until 1915, when publication was suspended by the great war, to be resumed in 1921 as a quarterly under the editorship of Sir Arthur Hurst. Perhaps at no hospital in the world has so much been done to increase clinical knowledge, and no other reports contain so much valuable material.

PALESTINE

(From a Special Correspondent)

Nov. 16, 1940.

Twenty Years of British Medical Service in Palestine

Col. G. W. Heron, director of medical services, spoke on the radio on twenty years' medical service of the British administration in Palestine. Under the Turks, which means before 1917, there was no organized medical service in the country. Some medical officers in larger towns performed sanitary and medical work. Hospitals existed only in Jerusalem and Nablus. After the occupation in 1917 a public health section under the late Colonel Garner was established. In 1920 the military administration was replaced by a civil government. The department of health was created. Colonel Heron stated that progress has not been confined to the activities of the government. Each community has had a share: the Mission hospitals, the Jews with the Hadassah and Kupath Cholim organization, the Arabs and Moslems with voluntary hospitals and free clinics. In 1920 there were twenty-three public hospitals. In 1940 there are thirty-nine. The Jewish community maintains today twelve, the government nine, the Arabs one purely Arab voluntary hospital. The most modern and largest hospitals are the Government Hospital at Haifa and the Hadassah University Hospital, built in 1939, on Mount Scopus, Jerusalem.

In 1918, before hostilities in Palestine ceased, the American Zionist Medical Unit came to Palestine and formed the nucleus of the Jewish medical service of today. This service included the Hadassah organization with its hospitals, school and infant welfare services; the Kupath Cholim organization, with over a hundred thousand members, some municipal or community hospitals, the antituberculosis league, the organization for the crippled children and other welfare services. Colonel Heron told about the antimalarial work. "In the last war Lord Allenby had to reckon on 5 to 10 per cent of his fighting forces being noneffectives from this cause between April and October 1918. Today among the men under General Neame that figure stands at a fraction of 1 per cent."

There are eighty-five babies' welfare centers, forty-eight supported by the Jewish community, thirty-four by the government and three by mixed Arab and European woman's committees. The general infant death rate in Palestine has been reduced to less than half what it was in 1920. With the assistance of Sir John Strathearn and his collaborators a government service has been established throughout the country with thirty-one eye clinics, of which twenty are first aid stations in villages. This service includes a mobile unit with a specially fitted lorry, a trailer caravan for the nurses and tents; 32,000 patients have been treated till now in tents. Colonel Heron's report included the work on hookworm, tuberculosis and quarantine control, the collaboration with laboratories and sanitary surveyors of municipalities and ambulance service.

Venereal Disease Control

A control scheme for fighting venereal diseases in Palestine was established four years ago. Now a review in *Health and Empire* notes the rapid strides made against these diseases. The total number of attendances at various clinics amounted to 9,729 in 1936 and 42,730 in 1939. For seamen of all nationalities exist facilities for free treatment in Haifa and Jaffa. A special campaign was made against endemic syphilis in Hebron, where the infection was commonly acquired by infants from neglect of hygienic conditions.

Australian Gift to the Red Cross

During September nine all steel motor ambulances built by Jewish and Arab factories in Palestine were delivered to Lord Somers, Middle East commissioner for the British Red Cross, by Col. Harold Cohen, overseas commissioner for the Australian Red Cross Society. Lieut. Gen. Sir Thomas Blamey accepted three weeks ago six motor ambulances for the Australian Imperial Force as a gift of the Australian Red Cross.

Appointment of Prof. Chaim Weizman

Prof. Chaim Weizman, president of the Jewish Agency and director of the Daniel Sieff Research Institute at Rehovot, has been appointed a scientific adviser to the British government, and a government laboratory has been put at his disposal. In 1914 Professor Weizman was lecturer in chemistry at Manchester University and discovered a valuable method of synthesizing acetone. This method permitted him to make acetone out of horse chestnuts.

Cancer Research Institute

The new department of the medical school (Nathan Ratnoff building) of the Hebrew University is the Cancer Research Institute under the direction of Professor Halberstaedter and Dr. Doljanski. Prof. Carl Neuberg has been appointed director of the chemical department of the Cancer Research Institute. Professor Neuberg was director of the Kaiser-Wilhelm Institute of Biochemistry in Berlin-Dahlem, and was founder and editor of the *Biochemische Zeitschrift.*

Marriages

WILLIAM MORTON BOGART JR., Minneapolis, to Miss Bertha Mae Johnson of Clifton Forge, Va., Nov. 9, 1940.

FREDERICK A. DOWDY, Birmingham, Ala., to Miss Anne M. Elliott of Moundville in Cleveland, Nov. 4, 1940.

FRANCIS NICHOLSON TAYLOR to Miss Sarah Elizabeth Madison, both of Petersburg, Va., Nov. 12, 1940.

THOMAS GIBSON BROOKS, Aiken, S. C., to Miss Alice Danforth in New York, Nov. 16, 1940.

THOMAS A. COATES, Youngstown, Ohio, to Miss Virginia O'Hearn at St. Louis, Nov. 1, 1940.

BERNARD S. ANDROSKY, Pittston, Pa., to Miss Marie Austin of Exeter, Nov. 16, 1940.

Deaths

Charles Wardell Stiles ✠ Medical Director, United States Public Health Service, Washington, D. C., who retired from active duty, Oct. 1, 1931, died, January 24, in the U. S. Marine Hospital, Baltimore, of myocarditis. Dr. Stiles was born in Spring Valley, N. Y., May 15, 1867. He received his early education at Wesleyan University, Middletown, Conn., and studied later at foreign universities, taking the degree of doctor of philosophy at Leipzig in 1890. He was awarded the honorary M.D. degree from the University College of Virginia, Richmond, in 1913. Dr. Stiles began his service with the government in 1891 as zoologist to the bureau of animal industry of the department of agriculture. In 1902 he joined the public health service as professor of zoology. He held teaching positions in medical zoology at Georgetown University from 1892 to 1906, the Army Medical School from 1894 to 1902, Johns Hopkins University from 1897 to 1937 and the Naval Medical School from 1905 to 1910. From 1909 to 1914 he was scientific secretary of the Rockefeller commission for the eradication of hookworm. He was the author of many books relating to his specialty and of a key catalogue of the parasites of man and animals, indexed in all the most important languages. Dr. Stiles was honorary custodian of the helminthological collections in the United States National Museum from 1893 to 1931; secretary of the advisory commission of the Smithsonian Table at Naples Zoological Station since 1894; United States government delegate to the International zoological congresses in Leiden in 1895, Cambridge 1898, Berlin 1901, Berne 1904, Boston 1907, Graz 1910, Monaco 1913, Budapest 1927 and Padua 1930. He was secretary of the International Commission on Zoological Nomenclature from 1897 to 1936 and secretary of the International Commission on Medical Zoology from 1910 to 1913. He was detailed as agricultural and scientific attaché in the United States Embassy, Berlin, Germany, 1898-1899. Since 1931 he had been an associate of the Smithsonian Institution, professor of zoology at the Rollins College, Winter Park, Fla., from 1931 to 1938 and a member of many American and European scientific societies. In 1892 he was elected foreign correspondent of the Société de biologie, France; in 1896 foreign correspondent of the Académie de médecine, France, and in 1899 corresponding member of the Zoological Society of London.

William Browning ✠ Brooklyn; Universität Leipzig Medizinische Fakultät, Saxony, Germany, 1881; lecturer on anatomy and physiology of the nervous system from 1884 to 1901, professor of neurology from 1901 to 1926 and since 1926 emeritus professor of neurology at the Long Island College Hospital, now the Long Island College of Medicine; president, 1901, and trustee since 1927, Medical Society of the County of Kings; a founder and past president of the Medical Library Association and of the Brooklyn Neurological Society; member of the American Neurological Association and the Association of American Anatomists; for many years state examiner in lunacy; served on the staffs of the Kings County, Wyckoff Heights, Long Island College, Jewish, Norwegian, St. John's, St. Catherine's, St. Christopher's, Brooklyn, Brooklyn State, Bushwick, Long Island State, Caledonian, Eastern District and Sea View hospitals; author of "The Normal and Pathological Circulation in the Central Nervous System" and "Medical Heredity"; aged 85; died, January 5, of carcinoma of the rectum.

George Frederick Juenemann ✠ Colonel, United States Army, retired, Los Angeles; Columbian University Medical Department, Washington, D. C., 1897; entered the army as an assistant surgeon Sept. 12, 1903; veteran of the Spanish-American and World wars; retired as a lieutenant colonel Dec. 31, 1922, for disability in line of duty; was retired as a colonel by a special act of Congress June 21, 1930; aged 65; died, Dec. 10, 1940, in the Veterans Administration Facility, West Los Angeles, of coronary occlusion.

Henry Bernard Freiberg ✠ Cincinnati; University of Cincinnati College of Medicine, 1918; assistant professor of clinical surgery (urology) at his alma mater; member of the American Urological Association; formerly secretary of the Cincinnati Academy of Medicine; fellow of the American College of Surgeons; attending urologist, Children's, Cincinnati General and Jewish hospitals; director, urology division, Deaconess Hospital; assistant attending urologist, Christ Hospital; aged 46; died, January 22, of pulmonary thrombosis and abscess due to a fall.

Charles Stewart Barnes, Philadelphia; Jefferson Medical College of Philadelphia, 1897; member of the Medical Society of the State of Pennsylvania; associate professor of obstetrics, Temple University School of Medicine; past president of the Philadelphia Obstetrical Society; aged 78; on the staff of the Philadelphia General Hospital; for many years on the staff of the Temple University Hospital, where he died, Dec. 29, 1940, of carcinoma of the stomach with metastasis.

Clyde Ernest Stackhouse ✠ Bismarck, N. D.; Northwestern University Medical School, Chicago, 1910; was a delegate of the American Medical Association at a special session in 1935; past president of the North Dakota State Medical Association; formerly medical referee of the North Dakota State Board of Public Welfare; on the staff of St. Alexius Hospital; aged 55; died, Dec. 26, 1940, of coronary thrombosis.

John Howard Allen ✠ Colonel, United States Army, retired, Dixon Springs, Tenn.; Columbian University Medical Department, Washington, D. C., 1899; entered the army as an assistant surgeon July 16, 1901; veteran of the Spanish-American and World wars; promoted through the various grades to that of colonel, June 29, 1927; retired Feb. 28, 1934, for disability in line of duty; aged 67; died, Dec. 3, 1940, of pneumonia.

Thomas Reese Foster, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; served during the World War; on the staff of the Leland Sanatorium, Ypsilanti, Mich.; aged 72; died, Dec. 3, 1940, in the Veterans Administration Facility, Hines, of gastric carcinoma.

Bernard Patrick Murphy, Putnam, Conn.; Jefferson Medical College of Philadelphia, 1895; member of the Connecticut State Medical Society; veteran of the Spanish-American War; aged 68; on the staff of the Day Kimball Hospital, where he died, Dec. 14, 1940, of carcinoma of the cecum.

Francis Parrier Horan ✠ Evanston, Ill.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; served during the World War; on the staff of St. Francis Hospital; aged 60; died, Dec. 23, 1940, of coronary thrombosis.

Zera Merritt Beaman ✠ North Manchester, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; past president of the Wabash County Medical Society; aged 60; died, Dec. 20, 1940, of cerebral hemorrhage.

Marion Donoby Eubank, Kansas City, Mo.; Marion-Sims College of Medicine, St. Louis, 1893; Northwestern University Medical School, Chicago, 1896; formerly a medical missionary; aged 78; died, Dec. 5, 1940, of cerebral hemorrhage.

George Nelson Murphy, St. Johns, Newfoundland; Halifax Medical College, Halifax, N. S., Canada, 1895; Bellevue Hospital Medical College, 1895; past president of the Newfoundland Medical Society; aged 70; died, Nov. 18, 1940.

Horace E. Evans, Perry, Ga.; Atlanta School of Medicine, 1911; member of the Medical Association of Georgia; aged 56, was killed, Dec. 15, 1940, when the automobile in which he was driving was struck by a train.

William Fuller Conners, Fulton, N. Y.; University of the City of New York Medical Department, 1880; aged 90; died, Nov. 14, 1940, of chronic nephritis and myocarditis.

Leroy Bromwell Humphrey, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893; aged 73; died, Dec. 15, 1940, of coronary occlusion.

Luke Irdel Foster, Ellijay, Ga.; Boston University School of Medicine, 1933; member of the Medical Association of Georgia; aged 32; died, Dec. 10, 1940, of heart disease.

Stephen Don Dorsey, Cumberland, Iowa; State University of Iowa College of Medicine, Iowa City, 1937; aged 27; was found dead, Dec. 2, 1940, of a self-inflicted bullet wound.

Francis Asbury Apgar, Oldwick, N. J.; Bellevue Hospital Medical College, New York, 1876; aged 89; died, Dec. 30, 1940, of uremia, pyelonephritis and posterior spinal sclerosis.

John Harbour McBee, Greenwood, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1903; aged 57; died, Dec. 14, 1940, of coronary thrombosis.

Justin Angus McDonald, Prince Albert, Sask., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1926; aged 41; died, Nov. 6, 1940.

Cyrus E. Johnston, Anna, Ohio; Starling Medical College, Columbus, 1880; aged 90; died, Dec. 19, 1940, of heart disease.

John F. Jessee, Waddy, Ky.; Louisville Medical College, 1888; aged 82; died, Dec. 7, 1940, of cardiac thrombosis.

Ralph Van Carpenter, Denver; Rush Medical College, Chicago, 1927; aged 42; died, Dec. 13, 1940.

Correspondence

PREGNANCY ACCIDENTS IN DIABETES

To the Editor: — There are several apparent flaws in the paper of Dr. Priscilla White entitled "The Prediction and Prevention of Pregnancy Accidents in Diabetes" in THE JOURNAL, Dec. 14, 1940, page 2039.

Before it can be concluded that pregnancy accidents in diabetes can be "prevented by continuous substitutional estrogen and progesterone therapy in replacement doses" and that this treatment is "well within the field of practical therapeutics," it might be well to examine the papers of the Smiths (*Am. J. Obst. & Gynec.* **33**:365 [March] 1937; **36**:769 [Nov.] 1938; **39**:405 [March] 1940) on which Dr. White's work is based. From their work and Dr. White's earlier paper (*Am. J. M. Sc.* **198**:482 [Oct.] 1939) one finds that pregnancy accidents may occur in patients with a normal hormonal balance and that abnormal hormonal balances may revert to normal without treatment. Since Dr. White's paper makes no mention of using alternate patients for treatment, how can one tell how many patients were actually benefited by hormone treatment? A recent personal communication from the Smiths states, in fact, that they are strongly of the opinion that any therapeutic trials with estrogen and progesterone should be made with the realization that this field is one of research investigation.

Apparently White feels that her results are so much better than those usually obtained that controls are unnecessary. In this connection I would point out that in a group of 53 pregnant women with diabetes at the Boston Lying-in Hospital there were 8 fetal deaths, or a 15 per cent mortality. These women received no specific treatment other than for the diabetes, and all were delivered normally whenever possible in accordance with the procedure discussed in our paper (Hurwitz and Irving: *Am. J. M. Sc.* **194**:85 [July] 1937). This mortality rate compares favorably with the 33 per cent given by White as the usual fetal mortality and with the 13 per cent of her hormone-treated series. As to her statement that obstetric hospitals may report lower rates owing to "a difference in patient clientele . . . obstetric hospitals seeing many short duration cases with onset of diabetes during pregnancy." it may be emphasized that (1) we receive many patients with severe diabetes from other diabetic clinics in Boston which have no obstetric facilities; (2) if we divide our cases into two groups of 27 cases with onset of diabetes before pregnancy and 26 cases with onset of diabetes after pregnancy, we find 4 fetal deaths in each group, or the same mortality rate, 15 per cent; (3) if we classify our diabetic patients according to severity of the diabetes, we find that there were three fetal deaths in the group of 19 women who never required insulin (16 per cent mortality) and only one death in the group of 13 women who required more than 60 units of insulin daily (8 per cent mortality). Apparently, then, the more severe the diabetes, the better the chance for a live baby!

The problem of the high fetal mortality from diabetic pregnancies will be solved by (1) demonstrating a preventable cause of fetal death, which has not been done as yet, or (2) showing a convincing drop of fetal mortality by using a therapeutic measure in alternate cases.

Neither the unqualified recommendation of cesarean section with its attendant higher maternal mortality, which was a previous contribution of Dr. White's (*Surg., Gynec. & Obst.* **61**:324 [Sept.] 1935), nor the enthusiastic sponsorship of hormone studies and treatment, which are time consuming, expensive and not readily available to most hospitals, should be accepted without better scientific controls.

DAVID HURWITZ, M.D., Boston.

NOTE.—This letter was submitted to Drs. White and Joslin, who reply:

To the Editor:—Between January 1936 and January 1941 we have had 82 pregnant diabetic patients on whom hormonal studies have been done. Among our 12 consecutive abnormal untreated patients fetal survival was 42 per cent; among 35 consecutive abnormal but treated, as described in my paper, 89 per cent; among 35 normal diabetic patients 91 per cent. In the light of these figures we are unwilling to increase the number of untreated abnormal patients.

Perhaps clarity in the matter of controls was sacrificed for brevity in the article which appeared in THE JOURNAL. I myself can see no scientific difference between the selection of alternate patients for therapy and of patients selected as in this work, namely, (1) 12 consecutive abnormal patients untreated, (2) 13 consecutive abnormal patients treated in the matter outlined by the Smiths, (3) 11 consecutive abnormal patients treated with oral preparations, (4) 11 consecutive abnormal patients treated with intramuscular preparations different from group 2. In addition, for controls we have those unfortunate patients subjected to my errors in the estimation of dosages of therapy.

Also because of limited space the character of the diabetes was not given in detail for the individual cases. Such complete data are given on pages 696 and 697 of the seventh edition of "Treatment of Diabetes Mellitus" by Joslin, Root, White and Marble.

As an added control on our series we should like to make determinations of the gonadotropic substance at two week intervals between the twentieth and thirty-second weeks and determinations of the pregnandiol from the twelfth week on diabetic patients not under our immediate care.

The previous contribution in *Surgery, Gynecology and Obstetrics* (**61**:324 [Sept.] 1935) was not a recommendation of cesarean section per se but a recommendation for a premature delivery to anticipate placental degeneration, since at that time we had no method of differentiating those patients susceptible and those not susceptible to this accident.

Finally, in our series of patients there are well defined causes of fetal death: (1) intra-uterine death associated with mild preeclamptic toxemia and hormonal imbalance, (2) an asphyxial death, without maternal symptoms, in a premature infant whose mother's hormonal balance was abnormal, (3) lethal congenital anomalies, (4) causes of death as in any obstetric practice—hemorrhagic disease of the newborn, pneumonia, erythroblastosis. Causes 1 and 2, "toxic," are, I believe, preventable, 3 not and 4 as in any obstetric series.

PRISCILLA WHITE, M.D., Boston.

To the Editor:—May I add a summary of my experience with pregnant diabetic women?

1. In 1913 I was placed in charge of a pregnant diabetic woman by Dr. B. while he went to Europe. The woman left me for a cultist and on Dr. B.'s return I was upbraided because he found her toxemic and she and her infant died and her husband committed suicide. Thereupon I reported all my cases up to that time of pregnant patients with diabetes (*Boston M. & S. J.* **173**:841, 1915).

2. The first notable achievement was Mrs. G. She had had twelve dead babies in succession and at least half of them while she was diabetic. I saw her first in coma in the sixth month of pregnancy. Later her diabetes proved so mild that she was able to omit insulin. As a stunt I brought her into the hospital, put her in a private room, kept her under close supervision and, thanks to Dr. R. S. Titus, who delivered her by cesarean section, she completed her thirteenth pregnancy and had her first living child. Presumably all of her earlier pregnancies could have resulted in the same way if attention to details and money had been available. She taught me

that the patient with ordinary mild diabetes can go through pregnancy successfully if treated with meticulous care.

3. Then came the period of deaths because of giant fetuses —superb babies which were lost immediately before, during or just after confinement. I shall never forget the sight of one of those truly beautiful, big, dead infants, nor do their mothers—because I still have them for patients.

4. Another phase of pregnancy followed the lengthening of lives of diabetic women—young women—and with sorrow now and again macerated fetuses were found at term and we wondered why, and at this time Dr. White came on the scene.

5. Our pregnant diabetic patients henceforth were in many instances hospitalized for the last three months. Some had live babies and some did not, but Dr. White definitely convinced us that deaths were not due to inadequate control of diabetes, to acidosis or to insulin reactions. She observed that among pregnancies eventually ending with dead babies from eight to two weeks before term there had been a brief period of indisposition, a gain in weight, a rise of blood pressure and the presence of albuminuria. In a few days the patient was about as well as ever, but fetal activity had ceased and at delivery weeks later the fetus was macerated. Thereupon clinical surveillance was sharpened. She saw these patients twice a day, and when these signs were observed delivery was instantaneous by cesarean section and our statistics improved. When we postponed delivery we lost the child. Another accident which could not be anticipated was premature delivery with neonatal death.

Values of Gonadotropic Substances in Pregnancy

Gonadotropic Substance	Cases	Live Babies (per Cent)
Normal	35	91
Abnormal		
Untreated	12	42
Treated	35	89

6. Then followed the hormone studies, suggested by the Smiths to complete their investigation of preeclamptic toxemia. At present there are 82 patients on whom estimations of gonadotropic substances have been made and in addition nearly all have had determinations of the pregnandiol. Twelve of the abnormal patients were untreated. The data are summarized in the table.

With such figures, which kind of supervision, study and treatment ought one to advise for our one hundred young women as they become pregnant, whose duration of diabetes is already fifteen years but with its onset in childhood?

7. Finally, the cases in our series reported by Dr. White are by no means all as spectacular as the following three cases, and another one in an earlier series, but these four deserve mention:

The first patient, with onset of diabetes at 8 years, was first pregnant at 24, with subsequent removal of a dead fetus in London while under the care of men all would recognize as outstanding. During the second pregnancy, when the duration of diabetes was eighteen years, high determinations of gonadotropic substance were made and she was treated for three months: cesarean section with birth of a live baby. The third pregnancy, when the duration of diabetes was twenty years, again with a high determination of gonadotropic substance and similar treatment: cesarean section with birth of a live baby.

The second patient, with onset of diabetes at 10 years, had her first pregnancy after she had had diabetes for twenty-one years, at the age of 31. High determinations of gonadotropic substance and marked preeclamptic toxemia were treated by replacement therapy: a live baby by cesarean section.

The third patient, with onset of diabetes at 24, had five unsuccessful pregnancies—two neonatal deaths, a twelfth week abortion, a twentieth week miscarriage and one therapeutic abortion. The second viable infant had been especially supervised with the greatest care by a prominent medical man and an obstetrician who delivered her by cesarean section. The baby died eighteen hours after birth. I forbade an abortion in the spring of 1940, and later this patient, whose pregnandiol was found to be low and whose gonadotropic substance was high, was treated with hormones by Dr. White. Otherwise her treatment was as in the second pregnancy, and on December 31 she was delivered by cesarean section by Dr. Titus of a living child. And, incidentally, I will add that all 82 patients were under the supervision and immediate care of Dr. White of our group and nearly all have been delivered by Dr. Titus, and following birth the infants have had the helpful advice of Dr. Warren Sisson.

The fourth patient is now in the hospital, as a volunteer, for some weeks undergoing tests with three new kinds of insulin. When I see her each morning and remember that she has no children, having lost all four in the course of her diabetic pregnancies, all with toxemia prior to 1930, and contrast her situation with the patients with normal gonadotropic substance, or if abnormal treated, of whose infants 89 per cent survived, I am unwilling to suggest to the six patients now awaiting confinement under Dr. White's care that they go without treatment if their gonadotropic substance is abnormal. These patients range in age from 24 to 38, have had diabetes from six months (1) to fifteen years (1) and have been under observation by Dr. White beginning with the second to the sixth month of pregnancy. Of these, all are primiparas.

8. It would be advantageous in this discussion if other patients with onset of diabetes at ages 8 and 10 years and with durations of the disease of eighteen, twenty and twenty-one years who have had successful outcomes of pregnancy could be reported, especially if their values for gonadotropic substance were known. In fact, if further series of cases were published with details such as are shown in the article of Hurwitz and Irving or in our own, it would be advantageous to all.

ELLIOTT P. JOSLIN, M.D., Boston.

MÉNIÈRE'S DISEASE AND HISTAMINE

To the Editor:—I have read, with interest, the query and answer regarding Ménière's disease and histamine which appeared in THE JOURNAL, January 11, page 177. The reference to the preliminary report (Shelden, C. H., and Horton, B. T.: Treatment of Ménière's Disease with Histamine Administered Intravenously, *Proc. Staff Meet., Mayo Clin.* **15**:17 [Jan. 10] 1940) is correct as stated but is, in a way, misleading. I presume that the newspaper account referred to by Dr. Odis A. Cook of Anadarko, Okla., had to do with a symposium on the treatment of Ménière's disease in which I took part and which was given before the American College of Surgeons in Chicago, Oct. 22, 1940; this report will appear in *Surgery, Gynecology and Obstetrics* later.

It is not my purpose here to argue the value of the Furstenberg method as compared with the histamine method of treatment of Ménière's disease. These methods will have to rise or fall on their own merits. The majority of our patients selected for treatment with histamine had previously been on a Furstenberg regimen without satisfactory results. I am concerned only with the fact that histamine in a 1:250,000 solution such as we originally suggested can be given intravenously to human subjects with perfect safety. During 1940 we actually gave histamine intravenously in this manner one thousand, two hundred and seventy-two consecutive times without any untoward effects. In no instance have we encountered acute histamine shock. The intravenous administration of histamine in the treatment of

Ménière's disease is so simple that it can be given in the home or as a part of office treatment. Our patients here at the Mayo Clinic are not hospitalized for this purpose. Ampules which contain 2.75 mg. of histamine diphosphate (this is equivalent to 1 mg. of histamine base) are now on the market and, by adding 1 ampule to 250 cc. of physiologic solution of sodium chloride, one has readily available the proper solution to be administered intravenously. We still employ the drip method and are using it daily in our routine work.

BAYARD T. HORTON, M.D., Rochester, Minn.

Medical Examinations and Licensure

COMING EXAMINATIONS

NATIONAL BOARD OF MEDICAL EXAMINERS

EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, February 8, page 533.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 17-19. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical.* Little Rock, June 5-6. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, June 5-6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, April 16. *Written.* Los Angeles, Feb. 24-27. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT:* *Medical. Written.* Hartford, March 11-12. *Endorsement.* Hartford, March 25. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* Derby, March 11-12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: July 8-10. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, May 12-13. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA:* Jacksonville, June 23-24. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, April 1. Dir., Bureau of Occupational License, Mr. H. B. Whittlesey, 335 State Capitol Bldg., Boise.

ILLINOIS: Chicago, April 1-3. Superintendent of Registration, Department of Registration and Education, Mr. Lucien A. File, Springfield.

INDIANA: Indianapolis, June 17-19. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, Citizens Trust Bldg., Fort Wayne.

KANSAS: Kansas City, June 17-18. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, June 5-7. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, March 11-12. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical.* Baltimore, June 17-20. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 17-18. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, March 11-13. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: * Ann Arbor and Detroit, June 11-13. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MISSISSIPPI: Jackson, June. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: *Reciprocity.* Helena, March 31. *Written.* Helena, April 1. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEW HAMPSHIRE: Concord, March 13-14. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, June 17-18. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 14-15. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

VIRGINIA: Richmond, June 17-20. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, March 3. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, March 18. Sec., Mr. Franklin E. Roach, Science Hall, University of Arizona, Tucson.

COLORADO: March 6-7. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: Washington, April 21-22. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: De Land, June 7. *Applications must be on file not later than May 24.* Sec., Prof. J. F. Conn, John B. Stetson University, De Land.

RHODE ISLAND: Providence, Feb. 19. Sec., Division of Examiners, Rev. Nicholas H. Serror, Providence College, Providence.

SOUTH DAKOTA: June. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 5. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Avenue, Milwaukee.

Ohio Reciprocity Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports 41 physicians licensed to practice medicine by reciprocity and 3 physicians so licensed by endorsement on October 1. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1934),	(1935)	Arkansas
Howard University College of Medicine		(1938)	N. Carolina
Loyola University School of Medicine		(1939)	Arizona
Northwestern University Medical School		(1934, 2) (1938)	Wisconsin, Pennsylvania, Oregon
Rush Medical College		(1933)	Penna.
State University of Iowa College of Medicine	(1933),	(1939)	Iowa
University of Kansas School of Medicine		(1938)	Kansas
Kentucky University Medical Department		(1910)	Kentucky
University of Louisville School of Medicine		(1940)	Kentucky
University of Michigan Medical School	(1931), (1932),	(1938)	Michigan
Wayne University College of Medicine		(1937)	Michigan
St. Louis University School of Medicine	(1925),	(1934) (1938)	Missouri, Tennessee
Washington Univ. School of Med.	(1936, 2),	(1938), (1940)	Missouri
University of Nebraska College of Medicine		(1939)	Nebraska
Long Island College of Medicine		(1937)	New York
Syracuse University College of Medicine		(1930)	New York
University of Buffalo School of Medicine		(1935)	New York
University of Oklahoma School of Medicine		(1939)	Oklahoma
Jefferson Med. College of Philadelphia	(1911)	Penna., (1938)	W. Virginia
Temple University School of Medicine		(1938)	Penna.
Univ. of Pennsylvania School of Med.	(1933),	(1934), (1936)	Penna.
Meharry Medical College		(1937)	Tennessee
Vanderbilt University School of Medicine		(1936), (1937)	Tennessee
Medical College of Virginia		(1930)	Virginia
Wisconsin College of Physicians and Surgeons		(1912)	Missouri

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard Medical School		(1936)	N. B. M. Ex.
St. Louis University School of Medicine		(1939)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1919)	N. B. M. Ex.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Failure of Physicians to Remove Foreign Body from Eye; Necessity for Expert Testimony.—While doing some carpentry work the plaintiff got something in his right eye which caused a severe burning pain. After having three roentgenograms taken of his right eye he consulted Dr. Ballard, who examined his eye and then attempted to secure from a local hospital a "giant magnet" used for withdrawing foreign objects from the eye. The physician, however, was refused the use of the instrument, because he was not a member of the staff of that hospital. The next day the plaintiff's eye was again examined with roentgen rays, this time by a Dr. Judson at the Los Angeles County General Hospital. He was denied admission to the county hospital but he was admitted to the California Hospital the following day. There he was placed under the care of a Dr. Boyce whom he had met at the county hospital. Dr. Boyce, after causing additional roentgenograms to be taken by a Dr. Blaine, performed an operation on the plaintiff's eye, assisted by a Dr. Rogers. The operation consisted of an attempt to withdraw the particle in the eye with a magnet followed by an attempt at removal by incision when it was discovered that the foreign body was nonmagnetic. The second day after the operation Dr. Boyce took the plaintiff to Drs. Ray and Rodman Irvine, who advised against any further surgical attempt at removal. A few days later Dr. Boyce looked at the eye, which by that time had become swollen shut, and informed the patient that he had "panophthalmitis." Subsequently the plaintiff brought a suit for malpractice against all the physicians named and the California Hospital. From a judgment for the defendants the plaintiff appealed to the district court of appeal, second district, division 1, California.

In the opinion of the district court of appeal, the record was barren of any evidence of negligence by Drs. Judson, Blaine, Ray Irvine and Rodman Irvine or by the defendant hospital. Regarding the alleged malpractice of Drs. Boyce and Rogers, the plaintiff contended that he had gone to the hospital and sought medical aid for only one purpose, to have the foreign body

removed from his eye by the use of the "giant magnet," and that by performing a cutting operation the physicians had exceeded their authority. The court, however, held that the plaintiff had placed himself under the physicians' care for the removal of a particle from his eye and that they resorted to surgery only after the use of the magnet proved ineffective. The court could not agree with the plaintiff's further contention that defendants Boyce and Rogers were negligent in making their diagnosis, in failing to locate the foreign particle and in determining that it was nonmagnetic. A mistake in diagnosis, said the court, would not make a physician liable in the absence of expert testimony of lack of due care, diligence, judgment and skill. The plaintiff had failed to introduce any expert testimony whatever to show that the diagnosis was incorrect or that some method or means other than that used should have been employed in an attempt to remove the foreign body from his eye. In the absence of such testimony, concluded the court, the judgment of the trial court in favor of all the defendants was proper. The judgment of the trial court was therefore affirmed.—*Adams v. Boyce et al., 99 P. (2d) 1044 (Calif., 1940).*

Malpractice: Failure of Physician to Administer Antitetanus Serum.—The minor plaintiff on May 26, 1936 fell on a stick which penetrated his thigh to the extent of about 5 inches (13 cm.). He was taken for treatment to the defendant physician, who described the wound as "entirely subcutaneous . . . not deep" and "just under the skin." The defendant cleansed the site of the wound externally, swabbed it "all the way to the bottom" with alcohol and also with tincture of iodine, inserted a loose gauze drain which had been soaked with alcohol and then applied a sterile dressing. This treatment was repeated daily for the next three days, during which time the defendant detected no sign of the onset of any infection of a serious nature and considered the condition of the wound to be "very satisfactory." The defendant did not see the plaintiff on the fifth day but on the sixth he administered the same treatment as before. On that occasion the child's stepfather told the defendant that the boy had complained that his jaws hurt him and were stiff. After an examination the defendant said that the boy's jaws were perfectly normal and that there was no rigidity of his neck muscles. Early the next morning the defendant was summoned to the boy's home, found him suffering from a "definite stiffness of the masseter muscle and some of his neck," and took him at once to a hospital. After another physician had seen the patient in his presence, the defendant left the hospital and never again saw the boy professionally. Dr. Shallow, under whose care the child was placed at the hospital, discovered that the boy was suffering from tetanus, or lockjaw, and from an infection of his leg, that his neck was stiff, that he was unable to open his mouth more than half an inch and that he had "generalized rigidity of all the voluntary muscles." Dr. Shallow caused 15,000 units of tetanus antitoxin to be injected and a few hours later did a débridement, excising the infected tract and thus removing "all of the devitalized tissue and some of the sound tissue." Twenty-three days later he performed a "closure" operation to bring the gaping edges of the wound together. The boy stayed in the hospital for about four weeks, during which time he received a total of 750,000 units of antitetanus serum. The boy, by his next friend and mother, and his mother in her own right sued the defendant physician for malpractice. The jury returned a verdict for the physician but the trial court granted a motion for a new trial, and the physician appealed to the Supreme Court of Pennsylvania.

The Supreme Court could not agree with the defendant's contention that the trial court should have directed a verdict in his favor because there was no issue of fact for the jury to decide. The question for determination, said the Supreme Court, was whether or not the plaintiffs had made out a prima facie case of malpractice. After discussing many cases defining malpractice, the court quoted with approval from Herzog on Medical Jurisprudence, p. 153, sec. 180, as follows:

> If a physician, in the course of his practice, is guilty of any dereliction of duty toward one of his patients, or fails to use proper skill and knowledge in the diagnosis or treatment of a patient's ailment, he is guilty of malpractice. . . . Where there are various recognized methods of treatment the physician is at liberty to follow the one he thinks best, and is not liable for malpractice because expert witnesses give their opinion that some other method would have been preferable. . . . Departure from approved methods in use will render a physician liable if he injures the patient, no matter how good his intention may have been, so a physician must be very careful in adopting a new method of treatment or one which is not recognized by the school of medicine to which he belongs, for if his treatment should prove injurious to the patient he would be liable for not having used recognized methods.

At the hearing before the trial court, continued the court, the expert witnesses for both the plaintiffs and the defendant admitted that the proper treatment for a punctured wound required that it be incised to its depth and thoroughly drained and that a subcutaneous injection of tetanus antitoxin be administered to the patient. From there on, however, the evidence was in irreconcilable conflict. Five physicians who testified for the plaintiffs said that the boy's injury was a punctured wound and indicated that the defendant was negligent in failing to administer antitetanus serum. Nine physicians who had been called by the defendant, however, testified that a substantial group of physicians in good standing in Philadelphia in May 1936 would have rendered the same treatment which the defendant had administered in this case and that such was "a reasonably successful" treatment. If, said the court, the boy's wound was a punctured wound, the medical testimony was in accord that the treatment administered by the defendant would not be proper. If it was not a punctured wound, the medical testimony was in conflict as to whether or not the defendant's treatment was in accord with good medical practice. The court held that the evidence showed that the defendant had not used the approved method of treating a punctured wound and so the plaintiffs had made out a prima facie case if there was also evidence that the boy's wound was a punctured wound. In the opinion of the court the physicians who testified for the plaintiffs supplied that evidence. The size of the wound, 5 inches in depth with a diameter of ½ inch, indicated that it was a punctured wound. The defendant's own description of the wound as "a punctured wound and shallow, being next to the surface, and just under the skin, about five inches in length," fits perfectly into the following medical definition of a punctured wound, in Christopher's "Minor Surgery," ed. 2, p. 30:

> Punctured wounds are those in which the orifice is relatively small compared to the depth of the wound. . . . The entrance rapidly seals over and the depths of the wound which have been invaded by the nail or missle are excellent soil for anaerobic organisms.

In the judgment of the court the question as to whether or not the boy's wound was a punctured one should have been submitted to the jury with proper instructions.

The defendant also contended that there was no evidence showing a causal connection between his malpractice and the plaintiff's lockjaw. The court held, however, that the medical testimony clearly supported the inference that an earlier administration of the antitetanus serum, at the time the defendant first attended the boy, would have averted the onset of lockjaw. The successful treatment of this patient in the hospital with tetanus antitoxin, although administered belatedly, proved its potency. The court concluded, therefore, that the granting of a new trial was proper and so it affirmed the order of the lower court.—*Hodgson v. Bigelow, 7 A. (2d) 338 (Pa., 1939).*

Society Proceedings

COMING MEETINGS

Annual Congress on Medical Education and Licensure, Chicago, Feb. 17-18. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.

American Association of Anatomists, Chicago, Apr. 9-11. Dr. E. R. Clark, Dept. of Anatomy, University of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Pathologists and Bacteriologists, New York, Apr. 10-11. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.

American Dermatological Association, New Orleans, Apr. 7-11. Dr. Harry R. Foerster, 208 East Wisconsin Ave., Milwaukee, Secretary.

American Orthopsychiatric Association, New York, Feb. 20-22. Dr. Norvelle C. La Mar, 149 East 73d Street, New York, Secretary.

Central Surgical Association, Ann Arbor, Mich., Feb. 28-March 1. Dr. George M. Curtis, Ohio State University, Columbus, Ohio, Secretary.

Pacific Coast Surgical Association, Los Angeles, Feb. 19-22. Dr. H. Glenn Bell, University of California Hospital, San Francisco, Secretary.

Tennessee State Medical Association, Nashville, Apr. 8-10. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.

Northern Tri-State Medical Association, Tiffin, Ohio, Apr. 8. Dr. E. Benjamin Gillette, 320 Michigan St., Toledo, Ohio, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1930 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

20:655-802 (Dec.) 1940

Nomenclature and Description of Electrocardiogram. H. E. B. Pardee, New York.—p. 655.

Use of Cathode Ray for Recording Heart Sounds and Vibrations: I. Studies on Normal Heart. W. B. Kountz, A. S. Gilson and J. R. Smith, with technical assistance of R. E. Sturm, St. Louis.—p. 667.

Morphologic Study of Cardiac Conduction System in Ungulates, Dog and Man: Part II. Purkinje System. D. J. Glomset and Anna T. A. Glomset, Des Moines, Iowa.—p. 677.

Electrocardiographic Changes Following Metrazol-Induced Convulsions. E. M. Kline, J. L. Fetterman and G. H. Williams Jr., Cleveland.—p. 702.

Peripheral Blood Flow in Hyperthyroidism. H. J. Stewart and W. F. Evans, New York.—p. 715.

Circulatory Reactions in Gastrointestinal Tract Elicited by Localized Cutaneous Stimulation. A. Kuntz and L. A. Haselwood, St. Louis.—p. 743.

Applications of Photoelectric Plethysmography in Peripheral Vascular Disease. A. B. Hertzman and J. B. Dillon, St. Louis.—p. 750.

American Journal of Medical Sciences, Philadelphia

200:717-860 (Dec.) 1940

Arteriosclerosis Obliterans: Clinical and Pathologic Study. E. A. Hines Jr. and N. W. Barker, Rochester, Minn.—p. 717.

Heart Size and Experimental Atheromatosis in Rabbit. L. N. Katz, A. Sanders, R. S. Megibow and S. Carlen, Chicago.—p. 731.

Methionine and Cystine, Specific Protein Factors Preventing Chloroform Liver Injury in Protein Depleted Dogs. L. L. Miller, J. F. Ross and G. H. Whipple, Rochester, N. Y.—p. 739.

Clinical Studies of Experimental Human Vitamin B Complex Deficiency. K. O. Elsom, F. H. Lewy and G. W. Heublein, Philadelphia.—p. 757.

*Treatment of Amyotrophic Lateral Sclerosis with Vitamin E (Tocopherols). I. S. Wechsler, New York.—p. 765.

*Sulfathiazole in Treatment of Pneumococcic Pneumonia: Comparative Study Utilizing Sulfapyridine Therapy. I. F. Volini, R. O. Levitt and H. B. O'Neil, Chicago.—p. 778.

Sulfathiazole Treatment in Respiratory Infections. D. S. Pepper and G. C. Ham, Philadelphia.—p. 784.

Sulfathiazole in Blood and Urine. F. W. Sunderman and D. S. Pepper, with assistance of Eleanor Benditt, Philadelphia.—p. 790.

*Objective Esophageal Changes Due to Psychic Factors: Esophagoscopic Study with Report of Thirteen Cases. W. B. Faulkner Jr., San Francisco.—p. 796.

*Roentgen Ray Therapy in Treatment of Herpes Zoster. P. McCombs, A. Tuggle and Connie M. Guion, New York.—p. 803.

Blood Studies in Malaria: Genesis of Blood Cells in Relation to Treatment with Quinine. G. Vryonis, Nashville, Tenn.—p. 809.

Maintenance of Sedimentation Rate of Erythrocytes in Vitro in Cases of Malignant Tumors and Hodgkin's Disease. H. Feldman, Brooklyn.—p. 820.

Vitamin E for Amyotrophic Lateral Sclerosis.—Amyotrophic lateral sclerosis has been regarded invariably as progressive and ultimately fatal from bulbar paralysis within from two to three years. Wechsler reports 20 cases in which treatment with tocopherol acetate was given. The results seem to confirm his preliminary report of 1940 regarding the curative effects of vitamin E. Treatment thus far consisted of 30 and later of 50 mg. daily of Ephynal or alpha-tocopherol acetate by mouth. Some patients required from 100 to 200 mg. of the preparation. About one half of the patients had 50 mg. of tocopherol in oil injected daily intramuscularly. All patients received food rich in vitamin E: lettuce, kale, whole wheat bread, coarse cereals, butter, bananas, fresh corn, fresh peas and beans, yolks of eggs and fat beef. Because vitamin E is fat soluble, two 5 grain (0.32 Gm.) pills of bile salts were given daily. In 2 instances discontinuing the vitamin brought about a relapse. This was promptly reversed when vitamin E was readministered. Only two such experiments were purposely undertaken. Eleven of the 20 patients showed varying degrees of improvement; 2 seem to have recovered, 4 showed marked improvement and 5 were moderately improved. Three patients may be said to have the disease arrested. Two patients with an advanced stage of the disease and bulbar signs died; 1 of these began to show improvement in his bulbar signs but died of pneumonia. At necropsy, cancer of the pancreas was found. The other patient died of bulbar involvement. Two patients have definitely grown worse and, of the remaining 2, 1 is worse after initial improvement and the other is slightly worse. The fibrillations are apt to disappear first, thus indicating a recession in the activity of the disease process. The patients who recovered showed fairly rapid improvement. It appears that treatment with the synthetic or the natural vitamin E must be permanent, unless the cause of failure to absorb (of which there is some evidence) is discovered and removed. Why, in view of the fact that natural vitamin E is so prevalent, there is failure of absorption and why if there is failure it occurs only in certain persons cannot be answered at this time. Two facts appear certain: vitamin E deficiency, probably of the alphatocopherol factor, is one cause of amyotrophic lateral sclerosis and administration of vitamin E may be a specific treatment. The studies suggest the possible treatment of other diseases of the nervous system which for want of better knowledge are called degenerative. It may be that some "degenerative" disease will be found to result from the privation of specific vitamins, though other factors may play additional roles; for example, the absence of vitamin B_6 in "degenerative" paralysis agitans not of the arteriosclerotic or inflammatory types.

Sulfathiazole for Pneumococcic Pneumonia.—Volini and his associates treated 169 patients having pneumococcic pneumonia with sulfathiazole by mouth. There were 9 deaths, a 5.3 per cent mortality. A control series in which sulfapyridine and serum combined were used showed a mortality of 4.2 per cent. The mortality in the bacteremic group was higher with sulfapyridine treatment. Sulfathiazole is apparently as effective as sulfapyridine. Sulfapyridine appeared more effective in type I and III infections, whereas sulfathiazole produced better results in type II and VII infections. Nausea, vomiting and the other common toxic manifestations of sulfapyridine therapy were much less frequent with sulfathiazole. Drug fever and especially the papulonodular eruption with conjunctivitis were the severe toxic manifestations of sulfathiazole medication. The blood concentration level varied considerably in the same patient on a maintenance dose of 1 Gm. every four hours.

Esophageal Changes Due to Psychic Factors.—Faulkner demonstrated that the esophagus undergoes definite changes in response to emotional upsets. This was observed with an esophagoscope in 13 patients seeking relief for symptoms ascribed to one or more of the organic systems. All the patients were referred, some because of esophageal complaints and others because of the author's interest in the study. Disturbing thoughts and emotions produced esophageal spasm. The spasm increased and the esophageal lumen narrowed or closed by suggestions calling forth destructive emotions, such as grief, anger, anxiety, apprehension, fear and spiritual imprisonment. The spasm relaxed and the lumen widened on proposals eliciting happiness, elation, enthusiasm, contentment and security. The esophageal reaction and alteration in the spasm was directly related to the patient's personal interest in the problem; conversely, situations in which the patient had no vital interest were incapable of eliciting an esophageal reflex. In addition to causing uniform spasm of the esophagus, the author believes that disturbing emotional influences are underlying factors in certain esophageal strictures, cardiospasm and so-called idiopathic pressure diverticula of the esophagus.

Roentgen Therapy for Herpes Zoster.—McCombs and his colleagues obtained success with roentgen rays in the treatment of herpes zoster. Of their 123 patients, 72 were given roentgen therapy. Of the 51 in the control group, 14 received injections of solution of posterior pituitary and others were given sedatives and salves or were merely observed to determine the duration and severity of the disease. Their present method of treatment is to give the patient 200 roentgens daily or every other day, for five or six treatments, using 200 kilovolts through 1 mm. of copper and 1 mm. of aluminum filter

at a distance of 50 cm. in a 6 by 15 cm. portal directly over the spinal root ganglions of the nerves involved. Of the patients treated 21 had had their symptoms for from one to three days, 23 for four to seven days, 11 for from eight to fourteen days, 4 for from fifteen to twenty-eight days and the remaining 13 had had the herpetic syndrome for more than a month. Of the patients treated with roentgen rays 46 per cent were cured within eight to fourteen days, whereas only 16 per cent of the control group were relieved within this period. It required from twenty-eight to sixty days to cure 35 per cent of the latter group, whereas 56 per cent of the patients treated with roentgen rays were cured within this time; 9 required more than a month for cure. Of these only 1 was seen within thirty days of the onset of the disease, the others in from one to eight months after the onset of symptoms. Thirty-nine, or 89 per cent, of the 44 patients treated within the first seven days of the disease were completely relieved; 2 were improved and 3 received no benefit. Of the 11 treated between the eighth and the fourteenth day of onset, 8 were relieved completely, 2 were partially benefited and 1 reported failure. Of the 4 treated between the fifteenth and the twenty-eighth day, 2 were cured and 2 reported failure. Of the 13 treated after the twenty-ninth day, 7 were cured, 1 was partially benefited and 5 obtained no relief. Herpes zoster must be treated promptly, as the cures in the first seven days were 89 per cent as compared to only 50 per cent after fourteen days. Symptoms may be exaggerated after the first treatment, and therefore patients must be warned of this reaction and advised that improvement will follow subsequent treatments. Patients may want to desist from roentgen therapy after a few treatments because pain is relieved and the local lesions do not show further spread. It is important to insist on the full course, as after a brief interval an occasional insufficiently treated patient has recurrence of pain and paresthesias. These were relieved by further treatment.

Archives of Neurology and Psychiatry, Chicago

45:1-198 (Jan.) 1941

Petechial Hemorrhages of Brain Experimentally Produced in Rats by Concussion. W. F. Schaller, K. Tamaki and H. W. Newman, San Francisco.—p. 1.

*Arsenic as Possible Cause of Subacute Encephalomyelitis: Correlation of Chemical, Clinical and Histologic Observations. A. D. Ecker and J. W. Kernohan, Rochester, Minn.—p. 24.

Distribution of Nerve Terminals (Boutons) in Human Spinal Cord: Quantitative Studies. J. Minckler, Omaha.—p. 44.

Changes in Brain in Alcoholism. L. D. Stevenson, Lillian E. McGowan and Anna M. Allen, New York.—p. 56.

*Studies in Diseases of Muscle: IX. Effect of Quinine and Prostigmine Methylsulfate on Muscular Rigidity in Paralysis Agitans. A. T. Milhorat, New York.—p. 74.

Seeping Intracranial Aneurysm Simulating Neoplasm: Syndrome of Corpus Callosum. W. H. Sweet, Chicago.—p. 86.

Representation of Sympathetic and Parasympathetic Nervous Systems in Forebrain of Cat. H. B. Carlson, E. Gellhorn and C. W. Darrow, Chicago.—p. 105.

Cerebral Swelling and Edema Associated with Cerebral Tumor: Histogenetic and Histopathologic Study. I. Scheinker, Paris, France.—p. 117.

Mescaline Hallucinations in Artists. W. S. Maclay and E. Guttmann, London, England.—p. 130.

Connections of Medial Geniculate Body in Cat. H. W. Ades, Emory University, Ga.—p. 138.

Rhythmic Myoclonus: Clinical Report of Six Cases. J. P. Dobson and H. A. Riley, New York.—p. 145.

Juvenile Huntington's Chorea. E. I. Falstein and T. T. Stone, Chicago.—p. 151.

Clinical and Electroencephalographic Changes in Child During Recovery from Encephalitis. D. B. Lindsley and Katharine Knox Cutts, East Providence, R. I.—p. 156.

Arsenic and Subacute Encephalomyelitis.—As considerable arsenic was found in most brains from subacute fatal cases of encephalomyelitis, Ecker and Kernohan studied the possible significance of this observation by correlating the clinical, pathologic and chemical features of the cases. The features of fatal encephalomyelitis frequently appear like those of a continuous action of some toxic agent. It is probable that many persons who are exposed continuously to arsenic from a multitude of legitimate everyday sources may be slowly poisoned because of its cumulative effects, making "chemical encephalitis" not only possible but probably not rare. The symptoms of arsenism are primarily headache and physical and mental fatigue, probably with accompanying dizziness, restlessness, excitability and mental dulness, a manifestation of cerebral symptoms. The authors studied three series of cases; 13 cases of known arsenical poisoning, a miscellaneous main control group of 24 cases listed in the neuropathologic files under the heading of "encephalitis" (the brains of which were tested for the presence of arsenic; 15 contained no arsenic and 9 from 0.02 to 0.05 mg. per hundred grams of tissue) and 12 cases in which more than 0.1 mg. of arsenic per hundred grams of tissue was found and this was considered significant. As a further control the brains in 6 fatal cases of malignant hypertension were studied and less than 0.02 mg. of arsenic per hundred grams of brain tissue was found in each instance. This fact is strong evidence against the hypothesis that arsenic is deposited in the brain in all cases of chronic cerebral damage. This view is also substantiated by the 24 other instances of long-standing cerebral disease which comprise the main control group. The 13 cases of known arsenical poisoning and the 12 with more than 0.1 mg. of arsenic per hundred grams of brain tissue presented precisely the same diffuse cerebral symptoms (fatigue, headache, vertigo, drowsiness and impairment of mental activity) which constitute a syndrome that is summarized as "progressive diffuse cerebral failure." The clinical, pathologic and chemical observations that concern the 12 cases are consistent with the hypothesis that they represent instances of chronic arsenical poisoning. The abnormally large amounts of arsenic found in the brains do not in themselves imply that arsenic is the cause of subacute encephalomyelitis, as it is possible that the arsenic ingested by most Americans might be deposited at a locus minoris resistentiae in greatest concentration. To consider this possibility, brains in 6 cases of malignant hypertension were studied. They resembled the cases of encephalitis in duration, symptoms and pathologic alterations. The fact that an appreciable amount of arsenic was not found in any of these brains is strong evidence against the likelihood that arsenic is deposited in all brains damaged over a period of months. Further evidence for or against the hypothesis can be obtained by microscopic studies of brains from recognized cases of chronic arsenism and by determining the arsenic content in the excreta and tissues, especially the nervous system and hair, in other cases of subacute or chronic meningoencephalomyelitis.

Quinine and Prostigmine Methylsulfate in Paralysis Agitans.—Milhorat observed effects of quinine and prostigmine methylsulfate on the muscular rigidity of 8 patients with paralysis agitans. Two of the patients had only slight stiffness of a few groups of muscles, 4 had moderate rigidity of two or more extremeties and the stiffness of 2 involved most of the voluntary musculature. Quinine was administered for periods of from two weeks to several months, with several alternate periods of control and of quinine administration. The dose in most instances was 0.3 Gm. of quinine sulfate orally two or three times a day. Six of the patients were receiving and continued to receive scopolamine daily. The muscular rigidity of 2 patients was much decreased. The muscular pain of both patients and the rigidity of the jaw muscles of 1, which had resulted in continual drooling and in malnutrition, were relieved considerably. Quinine was more effective for muscular pain than acetylsalicylic acid. The effect of quinine on tremor was slight in 1 patient and was not demonstrable in the other. Moderate reduction of muscular stiffness of 2 patients was observed; in 1 of these the muscular rigidity involved most of the voluntary muscles. Both patients complained of muscular pain, which was much decreased after taking quinine. Tremor was decreased slightly in the patient with the advanced stage of the disease but was unaffected in the other. In 4 patients the effect was absent or only slight. In 2 of these muscular rigidity was slight and in 2 moderate. Patients in whom quinine had a definite effect continued to derive benefit for from one to four months, after which quinine had a decreasing effect. In some instances the effect diminished until it was practically absent. After the drug was discontinued for a few weeks its effect again became evident. The effect of prostigmine methylsulfate on muscular rigidity was studied on 4 patients. The usual dose of the drug was 1.5 mg., given subcutaneously. Usually its administration was followed, within fifteen minutes, by a considerable increase in rigidity and tremor. In 1 patient with symptoms of only moderate severity the clinical picture rapidly developed into one resembling a far advanced stage.

Muscular rigidity of cogwheel character became severe in all extremities, and tremor which had previously been moderate became violent. The patient experienced diplopia. In another patient cogwheel rigidity developed in an extremity which was previously unaffected. Atropine abolished the effects of prostigmine methylsulfate and within ten minutes the symptoms returned to their previous status. In patients with congenital myotonia and atrophic myotonia an increase in the inability of the muscles to relax was observed after prostigmine methylsulfate caused an initial forceful contraction. The effect of prostigmine methylsulfate on muscular rigidity of paralysis agitans is not related to any unusual activity of the cholinesterase in this condition. It is probable that the effect of quinine on muscular function in cases of "myotonia" and paralysis agitans is the result of the antagonistic action of the drug to cholinergic nerve stimulation.

Bulletin of Los Angeles Neurological Society

5:185-234 (Dec.) 1940

*Change of Personality as Sequela of Acute Carbon Monoxide Poisoning: Report of Four Cases, One with Autopsy. J. M. Nielsen and S. D. Ingham, Los Angeles.—p. 185.

Arhinencephaly with Associated Agenesis of Corpus Callosum and Other Anomalies: Report of Two Cases. H. Shryock and R. S. Knighton, Los Angeles.—p. 192.

Syndromes Indicative of Benign Intracranial Complications of Otitis Media and Mastoiditis. C. B. Courville and J. M. Nielsen, Los Angeles.—p. 202.

Amyotonia Congenita (Oppenheim's Disease): Report of Case with Autopsy Findings. Lucile R. Anderson and D. L. Reeves, Los Angeles.—p. 210.

Intracranial Tumors Occurring in Three Members of a Family. G. H. Patterson and F. M. Anderson, Los Angeles.—p. 218.

Personality Changes After Carbon Monoxide Poisoning.—Nielsen and Ingham cite 4 cases of carbon monoxide poisoning in which there were unmistakable signs of basal ganglion involvement. The first two poisonings followed suicidal attempts, one was accidental and the cause of the fourth is not mentioned. After the acute episode the patients recovered to a variable degree, then relapsed and the 3 who have survived have continued in a state of complete loss of affect. They are inattentive, disinterested, without initiative or sense of responsibility and completely disabled for work. Parkinsonian symptoms are in evidence. The brain in the fatal case showed bilateral necrosis of the globus pallidus (which is in keeping with such poisoning) and also gross lesions in the white matter and cortex. In this case the initial coma of the asphyxia was followed by improvement, although apathy and loss of emotional reaction remained. There was a relapse two weeks after the initial coma, and death occurred one month after the acute episode.

California and Western Medicine, San Francisco

53:253-310 (Dec.) 1940

Surgical Management of Carcinoma of Colon. V. C. Hunt, Los Angeles.—p. 258.

Goiter in Northern California: Survey of 175 Thyroid Operations. A. H. Newton, Yreka.—p. 261.

Interpretation of Laboratory Examinations in Diagnosis of Infectious Diseases. C. S. Keefer, Boston.—p. 263.

Psychosis Due to Sulfanilamide. R. B. Toller, Imola.—p. 266.

Injuries to Nerves During Anesthesia. Dorothy A. Wood, San Francisco.—p. 267.

Conditioned Reflex Therapy of Alcoholic Addiction: Specificity of Conditioning Against Chronic Alcoholism. F. Lemere and W. L. Voegtlin, Seattle.—p. 268.

Indiana State Medical Assn. Journal, Indianapolis

33:645-746 (Dec.) 1940

Theory and Practice of Therapeutics in Allergy. E. L. Kenney, Baltimore.—p. 645.

Diagnostic Significance of Pain in Abdomen. I. Abell, Louisville, Ky.—p. 657.

Common Physical Disorders of Children: Their Nosologic Orientation and Ways of Viewing Them. N. C. La Mar, New York.—p. 660.

Influence of Tonsillectomy on Progress of Rheumatic Heart Disease. L. T. Meiks, Indianapolis.—p. 666.

Physical Agents in Treatment of Fractures. J. S. Coulter, Chicago.—p. 670.

*Recurrent Hyperthyroidism. R. L. Hane, Fort Wayne.—p. 675.

Recurrent Hyperthyroidism.—Hane defines true recurrent hyperthyroidism as that which arises after a postoperative period free of symptoms, from the very nature of the disease itself, while persistent hyperthyroidism is a reflection on the technic employed. Recurrent hyperthyroidism is largely concerned with diffusely hyperplastic or exophthalmic types of goiter. When secondary symptoms appear after a nodular or adenomatous goiter has been removed, either the thyroid remnants left have been of the hyperplastic type or small adenomas have been left which later grow and cause excessive secretion. Some workers explain all recurrences as due to inadequate surgery. Inadequate exposure of the lateral lobes of the thyroid, failure to search for retrotracheal projections and pyramidal lobes or ultraconservatism in removal of tissue is often productive of incomplete relief of symptoms. The author reviews cases from St. Joseph Hospital in which treatment tends to be conservative; many patients are operated on only after irradiation and medical measures have failed. From January 1925 to July 1940 there were 209 patients treated by subtotal thyroidectomy; there were 91 adenomatous goiters, 104 diffusely hyperplastic or exophthalmic goiters, 6 simple colloid goiters, 5 carcinomas and 1 struma lymphomatosa (Hashimoto). There were 11 deaths, giving a gross mortality rate of 5.26 per cent. Eight of the patients were being operated on the second time and 1 the third time. Of these 9 (4.3 per cent) patients, 5 had goiters of the diffusely hyperplastic or exophthalmic type and 4 of the adenomatous type. The intervals between the primary and secondary operations in the adenomatous goiters were ten, twelve, fourteen and nineteen years respectively. Of the diffusely hyperplastic or exophthalmic goiters requiring secondary surgery, 2 should be classified as persistent hyperthyroidism; in 1 lobectomy and double ligation preceded the secondary operation by five years; in the other hemorrhage encountered at surgery prevented satisfactory completion of the initial operation. There were three true recurrences of exophthalmic goiter. It seems that a few patients with exophthalmic goiter seem destined to recurrent symptoms and thus parallel the experience of certain patients with duodenal ulcer who continue to have recurrent ulcers in spite of increasingly radical surgery. A special study was made of the 162 patients operated on from 1925 to 1935 inclusive. Questionnaires were sent inquiring as to the appearance of symptoms since surgical intervention and the necessity of further operation. There were 6 deaths among these patients, a mortality rate of 3.7 per cent. It was possible to trace 122 of the 162 patients; 62 who had diffusely hyperplastic or exophthalmic goiter, 56 with nodular or adenomatous goiter, 2 with colloid goiter and 2 with carcinomas. One patient with a typical nodular goiter with mild hyperthyroidism had required a second operation. Ten years had elapsed between the two operations. There were 7 additional patients who reported either a return of symptoms or incomplete relief; 5 of these had goiters of the exophthalmic type, 1 an adenomatous goiter and 1 a carcinoma. Of the exophthalmic goiters giving further symptoms 2, or 3.2 per cent, can definitely be considered true recurrent hyperthyroidism and 3, or 4.8 per cent, persistent hyperthyroidism. Four of the 5 patients with exophthalmic goiters who had further symptoms have been treated conservatively and have improved. The postoperative management of these patients should include regulation of future activities. If any importance is to be placed on emotional or nervous drive as a primary etiologic factor in hyperthyroidism, it is only reasonable to eliminate it as far as possible. Any failure of normal postoperative improvement calls for increased rest and, if necessary, some form of sedation. When mild recurrent symptoms are manifest, a regimen of iodine medication, rest and sedatives is continued. Roentgen therapy may be tried and, if ineffective, further surgical intervention should be considered.

Journal of Pharmacology & Exper. Therap., Baltimore

70:323-466 (Dec.) 1940. **Partial Index**

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Effects of Continued Administration of Sulfanilamide on Blood. A. P. Richardson, San Francisco.—p. 370.

Source of Cerebrospinal Fluid: Distribution of Bromide and Iodide Throughout Central Nervous System. G. B. Wallace and B. B. Brodie, with assistance of H. Hecht and J. Chibnik, New York.—p. 418.

Biologic Assay of Oxytocic Activity of Pituitary Extract (Posterior Lobe). C. A. Morrell, M. G. Allmark and W. M. Bachinski, Ottawa, Ont., Canada.—p. 440.

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Newer Treatment of Parkinson's Syndrome. S. Alexander and S. F. Alexander, Park Ridge.—p. 580.
Leprosy: Case Report. J. J. Greengrass, Paterson, and I. Silverman, Clifton.—p. 583.
Low Temperature Treatment of Malignancy. N. M. Alter, Jersey City.—p. 586.
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Report on Trend of Mental Disease in the Western State Hospital District of North Carolina. F. B. Watkins, Morganton.—p. 639.
Policies and Needs of the State Hospital at Morganton. R. H. Long and W. E. Brown, Morganton.—p. 643.
Bronchoscopy in Bronchopulmonary Diseases. M. D. Bonner, Jamestown.—p. 646.
Our Efforts to Reduce the Maternal Morbidity from Childbearing. T. L. Lee, Kinston.—p. 654.
Sexual Inadequacy. G. C. Cooke, Winston-Salem.—p. 657.
Recognition and Management of Some Common Rectal Conditions. J. F. Robertson, Wilmington.—p. 662.
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Emergency Treatment of Acute Heart Failure in General Practice. R. D. McMillan, Red Springs.—p. 668.

Northwest Medicine, Seattle

39:435-480 (Dec.) 1940

*End Results in Cancer of Large Bowel. R. B. Cattell, Boston.—p. 438.
Carcinoma of Stomach and Intestine. S. F. Herrmann, Tacoma, Wash.—p. 441.
Malignant Tumors of Head and Neck: Problems in Diagnosis. S. T. Cantril, Seattle.—p. 444.
Carcinoma of Cervix. M. Harris, E. A. Addington, G. J. Bracher, Spokane, Wash., and C. B. Ward, Seattle.—p. 447.
Newer Drugs in Treatment of Arthritis. K. K. Sherwood, Seattle.—p. 452.

End Results in Intestinal Cancer.—Cattell analyzes the end results of 270 patients with cancer of the large intestine who had been observed for from five to nine years. The cancer of 172 was located in the rectum or rectosigmoid, and of 98 in the colon or sigmoid colon. The operability rate in the rectal cases was 57 per cent (98 resections) and for the colon cases 55 per cent (54 resections). All patients who refused operation, whether favorable or unfavorable, are includued among the nonresected group. Some of these had later resections elsewhere. A modified Mikulicz resection was performed on 51 of the 54 patients with colon cancer; in 3 a preliminary anastomosis was done around the lesion, followed by resection. There were 8 operative deaths among the 51 resections. Twenty-seven patients showed no evidence of recurrence for from five to nine years after operation, 14 patients are known to be dead of recurrence, 1 died one year after operation of pneumonia, without recurrence, and no observation of 1 was possible. There were no deaths among the 3 patients having two stage resections. Two were free of recurrence when observed five years after operation, and 1 died of recurrence four years after operation. Thirty of the 44 patients with carcinoma of the colon in whom resection could not be done either had colostomy or anastomosis around the lesion. There were 4 operative deaths, and only 2 patients were known to live more than one year after operation. Six had explorations only, and no operation was performed on 8. All these patients were dead within six months. Four types of operation (two stage abdominoperineal resection for 55, one stage abdominoperineal resection for 7, anterior or abdominal resection for 12 and perineal or posterior resection for 24) were employed for 98 of the patients having carcinoma of the rectosigmoid or rectum. The composite end results are 14.3 per cent operative mortality, 37.8 per cent of deaths from recurrence, in an additional 4.1 per cent the result was either unknown or death occurred from another cause, and 43.8 per cent showed no recurrence for from five to nine years. Of the 74 patients with rectosigmoid and rectal cancer who did not have resection, simple colostomy was done in 50; 32 of them died in one year or less and 6 died during the second postoperative year. Seven of the remaining patients had only exploratory procedures and 17 had no operation or refused operation. Of the 270 patients, 130 of those having resections survived the operation and 72, or 55.4 per cent of them, were free from recurrence. Radical resection is recommended for all patients having carcinoma of the large intestine.

Pennsylvania Medical Journal, Harrisburg

44:257-416 (Dec.) 1940

Some Problems Associated with Surgery of Biliary Tract. H. K. Gray, Rochester, Minn.—p. 269.
Cerebral Complications Following Acute Infectious Diseases: Therapeutic Value of Convalescent Serum. A. Gordon, Philadelphia.—p. 274.
Paroxysmal Rapid Heart Action: Differential Diagnosis and Treatment. W. J. Stainsby, Danville.—p. 279.
Clinical and Physiologic Investigation of Air Conditioning. M. B. Ferderber, Pittsburgh.—p. 283.
Painful Shoulder: Diagnosis and Treatment. L. Kaplan, Philadelphia.—p. 289.
Zinc Oxide Oil of Cloves Paste in Treatment of Osteomyelitis. J. J. McAleese, Pittsburgh.—p. 298.
Experience with Blood Transfusions at the Blood Bank of the Philadelphia General Hospital. I. S. Hneleski, Philadelphia.—p. 301.
Suppression of Lactation by Stilbestrol. C. W. Mucklé, Philadelphia.—p. 305.

Quarterly J. of Studies on Alcohol, New Haven, Conn.

1:413-604 (Dec.) 1940

Alcohol as Factor in Traffic Accidents. D. S. Berry, Chicago.—p. 413.
Mortality from Alcoholism in the United States. C. F. Schmid, Seattle.—p. 432.
*Note on Incidence of Syphilis in Alcoholics. L. L. Orenstein and W. Goldfarb, New York.—p. 442.
Pharmacopeial Definition and Description of Whisky and Their Inadequacies. H. W. Haggard, New Haven, Conn., and H. B. Haag, Richmond, Va.—p. 444.
Observations on Chronic Alcoholism and Cirrhosis of Liver. R. S. Boles and R. S. Crew, Philadelphia.—p. 464.
Blood Volume Studies in Acute Alcoholism. W. M. Nicholson and H. M. Taylor, Durham, N. C.—p. 472.
Alcohol Metabolism in Artificial Fever. P. L. Ewing, Chicago.—p. 483.
*Conditioned Reflex Therapy of Alcoholic Addiction: III. Evaluation of Present Results in Light of Previous Experiences with This Method. W. L. Voegtlin, F. Lemere and W. R. Broz, Seattle.—p. 501.
Vitamin Deficiencies and Liver Cirrhosis in Alcoholism: Introduction and Part I. N. Jolliffe, New York.—p. 517.
Uniform Control and Taxation of Alcoholic Beverages. S. Berkshire, Washington, D. C.—p. 558.

Syphilis and Alcoholism.—In order to determine the incidence of syphilis among alcohol addicts, Orenstein and Goldfarb obtained a detailed history of venereal infection or treatment and a blood Wassermann test on discharge of 1,001 consecutive admissions to the alcohol wards of Bellevue Hospital. The percentage of syphilitic infection among 680 white male patients was 3.3, and among the 100 Negro males it was 30. There were evidences of syphilis in 8.5 per cent of the white female patients and in 55 per cent of the Negro women. This is in contrast to the incidence of syphilitic infection among the white population, which has been variously reported from 1 to 4 per cent and up to 15 per cent for Negroes. The authors believe that the especially high incidence of syphilitic infection among the women is related to the fact that they are exposed to sexual aggressions while intoxicated.

Conditioned Reflex Therapy for Alcohol Addiction.—According to Voegtlin and his associates, a review of the results and theory of treating alcohol addicts by the conditioned reflex principle shows that disappointing results obtained by earlier workers were due to failure to consider one or more of the following fundamentals: 1. Successful conditioning demands a most exact and detailed technic, which cannot be accomplished without a literal application of Pavlov's principles and the acquisition of skill and judgment which result only from experience. 2. Attempts to establish aversion to liquors by the conditioned reflex by adulterating the drinks to be ingested with nauseants is not successful because of the narcotic effect of the alcohol that is absorbed, and it allows the development of a distaste only for the adulterated drink. This type of therapy is

unscientific, for it allows the alternation of positive (drugged liquor) and negative (undrugged liquor) stimuli. 3. Apomorphine is unsuitable as the unconditioned (nauseating) stimulus because its emetic and nauseant action is too brief and because of its hypnotic or euphoric after-effects. It is not always a safe drug to administer to alcohol addicts. 4. The conditioning séance must be carried out in a specially constructed treatment room from which all extraneous stimuli are excluded while the olfactory, visual and gustatory stimuli related to drinking are stressed. 5. All conceivable types of liquor must be utilized, for if an aversion is created toward only one or two liquors an early relapse is to be expected. 6. The patient must be taught to discriminate between noxious and innoxious beverages at the subconscious level of neural activity. 7. A proper technic requires the ability to administer the conditioned stimulus (liquor) within a few seconds before the unconditioned stimulus (nausea) manifests itself. A proper degree of conditioning is most important, as it is easy to "overcondition" the patient, with resulting loss of aversion. 8. Reinforcement of the conditioned reflex by systematic follow-up treatment is necessary if optimal results are to be obtained. 9. If the foregoing is carried out, a cure rate of more than 64 per cent may be anticipated; this may be raised by reinforcement procedures.

Surgery, St. Louis

8:903-1092 (Dec.) 1940

Morphologic Aspects of Carcinoma of Lung. B. Halpert, New Orleans.—p. 903.
Primary Bronchiogenic Carcinoma: Clinical Study. J. J. Singer, Los Angeles.—p. 910.
Body Section Radiography in Malignancy of Lower Respiratory Tract. S. Moore, St. Louis.—p. 924.
Bronchoscopic Diagnosis of Bronchial Carcinoma. P. Holinger, Chicago, and D. B. Radner, Honolulu, Hawaii.—p. 939.
*Diagnosis of Malignant Lung Tumors by Aspiration Biopsy and by Sputum Examination. L. F. Craver, New York.—p. 947.
Resection of Lung. E. D. Churchill, Boston.—p. 961.
*Surgical Considerations of Primary Carcinoma of Lung: Review of Literature and Report of Nineteen Cases. A. Ochsner and M. DeBakey, New Orleans.—p. 992.

Microscopic Proof of Malignant Lung Tumors.—According to Craver, since the microscope gives the only proof of the existence of malignant pulmonary tumors, no treatment should be undertaken until evidence is obtained and the necessity for treatment, which is radical and hazardous, is definite. Biopsy specimens of pulmonary tumors are often difficult to obtain, as many are not accessible to the bronchoscope. Thoracotomy or examination of pleural exudates is likely to be resorted to. In view of the shortcomings of these diagnostic procedures, the staff at Memorial Hospital began more than a decade ago to apply aspiration biopsy to pulmonary tumors, feeling that this procedure presented a means of obtaining a diagnosis quickly, with comparatively little discomfort or danger to the patient, and particularly without employing thoracotomy in inoperable cases. A study yielded 175 microscopically proved cases from a total of 401 cases. After 1932 the number of proved cases for the first time, and steadily thereafter, exceeded the number of unproved ones. The methods relied on for diagnosis in preparing for treatment the 175 patients were thoracotomy, bronchoscopy, aspiration biopsy and postmortem confirmation. Aspiration biopsy established the diagnosis in 64 cases during life. Two of the 175 patients happened to save gross pieces of tissue which they had expectorated. These pieces permitted sectioning in the routine manner and gave positive diagnoses. From 1935 to July 1939, aspiration biopsy accounted for 51.6 per cent of all the microscopically proved cases, or 49 of 95 cases. A detailed account of the technic of aspiration biopsy of the lung is given and its hazards are discussed. In the Memorial Hospital series, of a total of 230 lung aspirations there has been no case of empyema, pulmonary abscess or growth of tumor along the puncture tract. Two instances of air embolism resulting from pulmonary puncture have been encountered. On the theory that air bubbles introduced into the pulmonary venous system and thus via the left side of the heart into the systemic circulation tend to ascend, it is recommended that all punctures be done with the patient lying flat or in a slight Trendelenburg position so as to minimize the danger of air bubbles going cephalad. Needles of the smallest caliber consistent with the minimal danger of breakage are to be employed. Successful aspirations can be obtained from subcutaneous tumors even with hypodermic needles if the proper technic is employed. Development of technic of searching sputum for tumor cells is worthy of trial.

Primary Carcinoma of Lung.—Ochsner and DeBakey state that in a decade the prognosis of primary carcinoma of lung has been reversed from absolutely hopeless to relatively favorable. The fact that a number of patients living and well five years or more after operation is due chiefly to the rapid technical strides made in thoracic surgery. Its developments are now in such a perfected state that the most important consideration is early diagnosis. The consensus is that the only curative treatment of primary pulmonary carcinoma is surgical extirpation. Any procedure short of total pneumonectomy is irrational, as it is the only procedure which removes adequately the primary focus and the regional lymph nodes. Lobectomy does not extirpate them. The high incidence of lymph node involvement is seen in the following: Of 2,579 collected cases the regional lymph nodes were involved in 75.9 per cent. In Forni's collected cases of pneumonectomy the incidence of recurrence was 9 per cent, as compared to 25.8 per cent following lobectomy. Operability in pulmonary carcinoma depends on the time elapsed from the onset of symptoms. Many cases are inoperable when first seen. Factors which preclude resection are distant metastases, involvement of the contralateral lung, evidence of advanced mediastinal involvement, fixation of the trachea and bronchi, widening of the carina, extension of the process above the bifurcation, involvement of the phrenic or vagus nerves and extension to the pleura. Debility and advanced age also contraindicate radical extirpation. Borderline cases should be given the benefit of exploration even at the risk of closing up many of them without extirpation, as in these instances it is the only means by which operability can be determined. The operability is still far too low, probably because of the fact that diagnosis is late. In 139 collected cases 68 (49 per cent) were operable, whereas 19 (63.3 per cent) of the authors' 30 cases were operable. They believe that their higher incidence of operability is probably due to the fact that they explored apparently inoperable cases which at the time of operation were found operable. A preliminary artificial pneumothorax is extremely desirable in preparing these patients for pneumonectomy, as is general rehabilitation. For pneumonectomy the most important requirements are complete control of intrapulmonic pressure, adequate facilities for aspiration of respiratory secretions, maintenance of quiet respirations and high oxygenation, avoidance of distressing cough reflex and rapid return to consciousness after operation. For this a highly trained and skilful anesthetist is obligatory. The anesthetic agent should permit the administration of a high concentration of oxygen; cyclopropane and ether permit this. The authors prefer cyclopropane. Total removal of the involved lung and the mediastinal lymph nodes can be adequately performed only by individual ligation of the hilar structures. The various approaches in pneumonectomy, the technic of exposure, isolation and ligation of the hilar structures are described, illustrated and evaluated. Analysis of the 139 collected and the 19 personal cases show a general mortality of 45 per cent. The most frequent causes of death are cardiac and pleuropulmonary complications. A follow-up of 57 of 73 of the collected series reveals that 70 per cent of the patients are still living, as are 7 of the authors' 10 patients who recovered from operation, the longest survival being four and one half years.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

48:715-778 (Dec.) 1940

Social History of Medicine. H. E. Sigerist, Baltimore.—p. 715.
Clinical Study of Gonadotropic Hormone in Ovarian Dysfunction. V. L. Stevenson and L. A. Stevenson, Salt Lake City.—p. 723.
Suction Drainage in Prevention and Treatment of Peritonitis and Its Complications. R. C. Chaffin, Los Angeles.—p. 727.
Coccidioidal Granuloma: Report of Case Originating in Texas. M. P. Foley, J. G. Love, A. C. Broders and F. R. Heilman, Rochester, Minn.—p. 738.
Experiences with Stilbestrol. P. G. Fuerstner, San Francisco.—p. 742.
Clinical Investigation of Synthetic Estrogen Stilbestrol. L. Felger and S. Gendel, Los Angeles.—p. 746.
Congenital Pits of Lower Lip: Report of Three Cases in One Family. C. E. Gurney, Portland, Ore.—p. 753.
New and Improved Method of Circumcision. C. J. Ross, Portland, Ore.—p. 755.
Use of Chemically Pure Digitalis Glycosides, with Special Reference to Lanatoside C. A. K. Hrenoff, San Francisco.—p. 757.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

10:113-220 (Oct.) 1940

John Browne and His Treatise on Muscles. K. F. Russell.—p. 113.
Denis Browne Splints in Treatment of Talipes Equinovarus. N. M. Harry.—p. 117.
Consideration of Some Problems Associated with Carcinoma of Cervix. L. S. Kidd.—p. 123.
Development of Lymph Nodes in Fat. E. S. J. King and P. MacCallum.—p. 126.
Diagnosis, Incidence and Treatment of Avitaminosis A and D in Obstructive Jaundice. M. F. A. Woodruff and R. D. Wright.—p. 135.
*Perforation of Small Intestine by Swallowed Foreign Bodies. C. B. Melville.—p. 146.
Immediate and Remote Effects of Minor Lesions of Cervical Portion of Spinal Cord Following Head Injury. I. M. Allen.—p. 157.

Perforation of Small Intestine by Swallowed Foreign Bodies.—Melville points out features of perforation of the small intestine by an ingested foreign body which will aid in the correct diagnosis when the patient is first seen. He reports 5 cases and 1 of perforation of Meckel's diverticulum by an ingested foreign body. Operation was performed by the author on 3 of these patients. Examination of the records of the last six years of the Alfred Hospital revealed 2 further cases; 1 of these was of Meckel's diverticulum. The sixth patient was under the care of K. E. Rex and C. A. M. Renou, who supplied the details. In all except the 1 case the terminal part of the ileum was perforated. The condition is not common and apparently has never been diagnosed before operation or necropsy. This is because of its close similarity to acute appendicitis in some cases; in others the clinical features have been too confusing to suggest the origin of peritonitis. This group may also be confusing because similar cases are rare in any one surgeon's experience. To aid in the diagnosis of the condition a theoretical postulate consisting of colic, peritonitis and a locus in the lower part of the abdomen is advanced. Many of the acute cases approximate this concept. The influence of the omentum and of the effective size of the perforation modifies the features of a typical case. Although uncommon, perforation of the small intestine by a foreign body should be kept in mind as a possible cause of obscure peritonitis. The author reviews 9 cases from the literature.

British Medical Journal, London

2:693-730 (Nov. 23) 1940

*Treatment of Burn Shock with Plasma and Serum. D. A. K. Black.—p. 693.
Jaundice in Leuko-Erythroblastic Anemia. J. M. Holmes and A. J. McCall.—p. 698.
Penetrating Bayonet Wound of Perineum: Case with Interesting Complications. J. S. Horn.—p. 700.
*Treatment of Burns by Silver Nitrate, Tannic Acid and Gentian Violet. J. A. Ross and K. F. Hulbert.—p. 702.
Heparin in Subacute Bacterial Endocarditis. G. C. Dockeray and E. Kawerau.—p. 703.

Treatment of Burn Shock with Plasma and Serum.—Black treated 7 severely burned or scalded patients with infusions of plasma and/or serum. The plasma used was obtained by separation from blood taken into standard Medical Reserve Corps bottles containing 180 cc. of citrate solution, the final product being "half-strength plasma." The serum protein was made up by the addition of sterile water to dried serum, and the solution used was four times the concentration of the original serum. Blood and plasma volume, hematocrit, hemoglobin and erythrocytes, protein and albumin, chloride, bicarbonate and urea, sodium and potassium were determined before and after the infusion of plasma or serum and after complete recovery from the burn. Records were kept of the pulse and blood pressure and of the patient's general condition. With the exception of the sixth patient, whose injury was slight in extent and degree, the burn was followed in less than an hour by severe and increasing classic shock. There was no remission after the onset of shock justifying a distinction between primary and secondary shock. Three infusions of from 150 to 300 cc. of the serum and six infusions of from 500 to 2,000 cc. of the plasma were given the 7 patients. The fourth patient, who was burned over more than half the body surface, did not respond to concentrated serum infusion. The other eight infusions were all followed by definite, in some cases dramatic, improvement. Peripheral cyanosis disappeared, the veins filled out and mental apathy gave place to alertness. The mental quickening was sometimes evidenced by a new consciousness of pain in the burned area. Patients were better able to take fluids by mouth and to retain them. The blood pressures rose. No reaction followed serum or plasma infusion. The results with four times normal serum were less favorable than those with plasma; 1 of the 3 patients treated with concentrated serum died and the other 2 required an infusion of dilute plasma later. The period during which patients with burns are in jeopardy from shock extends for some forty-eight or seventy-two hours after the accident. The pathologically increased capillary permeability, the fundamental lesion in shock, can be improved by maintaining during the danger period an adequate blood volume by replacing the protein and fluid which are lost. This maintenance prevents the onset of irreversible tissue changes. Since shock is an ingravescent condition plasma should be given early, before general circulatory changes occur. In patients who have had no hemorrhage the determination of hemoglobin offers a sensitive measure of the amount of plasma lost. For approximate calculation of the plasma deficit it is justifiable to assume a hemoglobin percentage of 100 and a blood volume of 5 liters, of which 3 liters is plasma. The increased hemoglobin value observed bears the same ratio to the initial value as the initial value for blood volume does to the new blood volume, since the erythrocyte volume remains unchanged. This may be expressed by $\frac{Hb_2}{Hb_1}=\frac{BV_1}{BV_2}$ or, substituting the assumed values, $\frac{Hb_2}{100}=\frac{5}{(5-x)}$, where Hb_2 is the observed hemoglobin value after the burn and x is the amount of plasma lost; x can be calculated easily if Hb_2 is known. Patients who show a hemoconcentration of more than 10 per cent and in whom the burn involves an area equal to one limb or greater should be given plasma or serum. For patients with shock an overdose of fluid is as dangerous as an underdose, though the danger is less with protein-containing infusions than with saline solutions, which should not be used. To avoid this danger the approximate deficit in the plasma volume should be calculated on admission and the citrated plasma given intravenously while preparations are made for cleansing the burned area. After the burned areas are cleansed, the hemoglobin estimation should be repeated and if hemoconcentration exceeds 10 per cent a further appropriate amount of plasma should be given. This means that in the average case of extensive burns a liter of plasma should be given before the burns are debrided, while after débridement as much as 2 or 3 liters may be required; such an amount is best given by cannula at a drip speed of about a hundred drops a minute. It is necessary to examine the patient every few hours during the second infusion to prevent overdosage. Engorgement of the neck veins is a valuable sign that too much fluid is being given. The intravenous drip should not be maintained for more than one or at most two days, as by then fluid by mouth should be possible and the danger of death from shock is diminishing, while the risk of pneumonia, which is aggravated by pulmonary edema, is becoming more imminent. For patients with burns, as for others with disordered water metabolism, records of fluid balance should be kept, and the amount of fluid given by mouth should be regulated on this basis.

Silver Nitrate, Tannic Acid and Gentian Violet for Burns.—Ross and Hulbert report the results they obtained with silver nitrate, tannic acid and gentian violet in the treatment of 5 severely burned airmen; 4 were admitted to their care within eight and 1 forty-eight hours after injury. The treatment followed in each instance closely paralleled that advocated by Dennison in 1939. The immediate coagulation method proved completely successful in their 5 cases. Sepsis and pulmonary complications were absent, despite the variety of anesthetics used. The method is a definite advance on the treatment of burns, especially in war surgery. Thorough gentle cleansing of all loose epithelium is essential before the solutions are applied. Splinting the burned limbs to ensure rest and to prevent contractions is essential. No other dressings are required. The results justify the exacting routine of repeated applications of gentian violet, silver nitrate and tannic acid solutions to produce a dry smooth coagulum.

Lancet, London

2:611-640 (Nov. 16) 1940

*Mass Radiography in Practice. F. Heaf.—p. 611.
Traction Lesions of External Popliteal Nerve. H. Platt.—p. 612.
*Pneumococcic Meningitis Since Introduction of Sulfapyridine. F. H. Coleman.—p. 615.
Blood Urea and Plasma Chloride in Experimental Hemorrhage. D. A. K. Black.—p. 618.
Spontaneous Pneumothorax Complicating Staphylococcic Septicemia. E. C. B. Butler and K. M. A. Perry.—p. 619.

Mass Roentgenography in Practice.—The object of mass roentgenography, according to Heaf, is to discover cases of pulmonary tuberculosis. It should not be considered as a means of determining the incidence of tuberculosis but as an instrument for combating the spread of infection by revealing the hidden active cases among the apparently healthy population. Roentgenography should be presented to the public as part of a general fitness campaign rather than a search for cases of tuberculosis. An organization for the rehabilitation of the abnormal cases discovered must be promoted. Inpatient observation and treatment must be avoided where possible and every effort made to prevent the development of invalidism. Attention should be given to the domestic environment, employment, leisure and daily routine of those whose chests show lesions which are or may be of clinical significance. The diagnosis of chest lesions discovered by mass roentgenography may have far-reaching consequences, and doubtful cases should be submitted to a board of three specialists, of whom the tuberculosis officer should be one. Sufficient accommodation should be available after the war for the observation and treatment of active cases. Investigations into domiciliary conditions and employment, training in suitable occupations, and redistribution of labor might be under the management of a national rehabilitation board, assisted by industrial organizations. Cases needing care because of the presence of tuberculosis would be handed over to the public health authorities for observation and treatment. Since the main benefit of the scheme would fall to industry, industrial concerns should help financially in the inauguration and maintenance of the scheme, while the treatment and part of the rehabilitation costs might be borne by the local authorities.

Pneumococcic Meningitis Since Sulfapyridine.—Coleman summarizes in tabular form most of the published cases of pneumococcic meningitis in which sulfapyridine was administered and reports 2 cases of his own. The tabulated cases number 27. The author finds that sulfapyridine has reduced the case mortality of pneumococcic meningitis from close on 100 per cent to about 35 per cent. To be effective, sulfapyridine must be given in large doses at the outset; at least 6 Gm. a day should be given to an adult for the first four or five days, after which the dose can gradually be decreased. There is no reliable clinical evidence that antipneumococcus serum is of value in a straightforward case. Frequent lumbar puncture should be avoided, except where it is indicated for the relief of the patient. Sulfapyridine should be continued in decreasing doses for at least a week after the temperature has returned to normal. A patient who is going to recover will nearly always show some signs of clinical improvement within the first three or four days; and, if improvement is noticed at all, the patient almost always makes a complete recovery in the end. Provided dosage has been adequate, cases proving resistant to treatment are due either to a strain of pneumococci insensitive to sulfapyridine or to a strain which has become tolerant to the drug.

2:641-672 (Nov. 23) 1940

The Physics of Blast. G. A. Sutherland.—p. 641.
*Chemotherapy of Cerebrospinal Fever in Childhood. Margaret I. Williams.—p. 642.
*Deficiency of Vitamin C and Vitamin P in Man. H. Scarborough.—p. 644.
Acute Idiopathic Porphyry: Report of Case. L. Rau.—p. 647.
Treatment of Splenomegaly by Ascoli's Method. R. W. Stephenson.—p. 648.
Fistula of Penile Urethra After Gunshot Wound. G. G. Turner.—p. 649.
Apparatus for Giving Intravenous Anesthetics Continuously. R. R. Macintosh and E. A. Pask.—p. 650.
Acute Fatal Hyperparathyroidism. F. B. Smith and R. T. Cooke.—p. 650.

Chemotherapy of Cerebrospinal Fever in Childhood.—Williams reports 102 cases of cerebrospinal fever in patients under 16 years of age. Lumbar puncture was performed in every case on admission, and the organism was typed. In the case of turbid fluid, sulfanilamide was given immediately. Sulfanilamide was used because it is much more readily tolerated by children than sulfapyridine and causes less vomiting; it is also cheaper. If there is any vomiting, the lost dose is immediately readministered. Sulfanilamide alone was given to 94 patients, the average daily dose varying from 2.5 Gm. in infancy to 7 Gm. in older children, and the usual period of treatment was ten days. An adequate initial dose was considered to be of paramount importance; at least half of the total daily dose was given as the initial dose. In a few cases sulfapyridine was given alone and in others to alternate with sulfanilamide. Two patients were given serum intrathecally and intramuscularly. Fluids were administered liberally, if necessary parenterally, and an iron mixture was given during convalescence. Complications of sulfanilamide therapy were cyanosis, morbilliform eruptions and sometimes severe anemia. It seems to be the susceptibility of the individual hemopoietic system rather than the amount of the drug administered that determines the onset of anemia. Of 102 patients 13 died, giving a case fatality of 12.7 per cent. Of the 13 who died, only 7 had received adequate therapy. In 54 children under 3 years the fatality rate was 14.8 and in 21 under 1 year it was 19 per cent. The most favorable age group was 5 to 10 years, in which there were no deaths.

Deficiency of Vitamin C and Vitamin P in Man.—According to Scarborough, a low capillary resistance in people with various forms of nutritional deficiency was found to be associated with a deficiency of vitamin P. This communication demonstrates existence of deficiencies of both vitamin C and vitamin P in man. The 6 patients studied all had a clinical deficiency of vitamins but, apart from this, were free from other obvious organic disease, except patient 1, whose blood gave a positive Wassermann reaction. Patients 4, 5 and 6 gave a history of chronic alcoholism. All were in bed in the hospital during the investigation. On admission each patient was immediately submitted to rigid dietary control, the diet being as far as possible free from vitamins A, the B complex, C, D and E. The calorific value of the diet was unrestricted. Vitamin P was administered as an active fraction prepared from oranges. The administration of vitamin P did not arrest the subcutaneous hemorrhages. Two patients (5 and 6) already showing clinical signs of deficiency of vitamins were given the "vitamin free" diet already described and supplements of vitamins A, B_1, C and D in doses sufficient to correct a deficiency of these vitamins. Capillary resistance was determined repeatedly to assess the deficiency of vitamin P. In neither case 5 nor case 6 was there any hematologic abnormality which could explain the spontaneous bleeding. Since a much increased fragility of the capillary walls (low capillary resistance) was determined in both cases, it is concluded that the spontaneous petechial hemorrhages were due to this excessive fragility. The reported experiments show that at least two forms of subcutaneous bleeding may develop as the result of nutritional deficiency in man. One form is due to a deficiency of ascorbic acid and is arrested promptly by the administration of this substance but not of vitamin P. It is not necessarily accompanied by a low capillary resistance, although, since dietary deficiency in the human subject is almost always multiple, it is often associated with a decreased resistance. A decreased capillary resistance is an expression of a deficiency of vitamin P and is increased promptly by the administration of this vitamin but not of ascorbic acid. Spontaneous petechial bleeding may develop when the capillary resistance is low. It is associated with feelings of lassitude and easily induced fatigue and with pains in the shoulders and legs. It is an expression of a deficiency of vitamin P and is controlled by the administration of this vitamin. The two forms of hemorrhage are different in appearance. The hemorrhages characteristic of a deficiency of ascorbic acid are large (ecchymoses) and involve considerable areas of subcutaneous tissue and muscle. The gingival bleeding which develops in scurvy is an expression of a deficiency of vitamin C and is not controlled by the administration of vitamin P. The hemorrhages developing as the result of a deficiency of vitamin P are always small (petechiae) and take place in the skin. They are often circumpilar. Both forms of hemorrhage tend to appear first and are often more severe in parts exposed to the pressure of clothing and in the legs because of the higher venous pressure in that part.

Anales de la Sociedad de Puericultura de Buenos Aires

6:159-242 (July-Sept.) 1940. **Partial Index**

*Thyroid Hormone in Congenital Myxedema. A. Buzzo, A. A. de Muñoz and A. Calabrese.—p. 194.
*Sulfanilamide in Treatment of Fissured Nipples. H. Magliano and H. Ivon Manara.—p. 203.

Thyroid Hormone in Congenital Myxedema.—Buzzo and his collaborators administered thyroid hormone (thyroglobulin) in several cases of typical congenital myxedema of infants. Five cases are reported. The substance was administered in fractional daily doses of from 0.01 to 0.05 Gm., given by mouth for two consecutive weeks, followed by periods of rest of one week for the first year and of two weeks for the second and last year of the treatment. Vitamins A and D were given to the patients from the sixth month of the treatment on. The treatment was well tolerated. It caused irritability and insomnia in a few but was controlled by temporary discontinuation of the treatment. The substance is efficacious, easy of administration, has a favorable selective action on the intestine by which constipation is controlled, and does not injure the cardiovascular apparatus. General symptoms, physical and mental signs improve so as to approach the normal or nearly normal state in the majority of cases. The substance possesses pharmacodynamic action as efficient as that of the total thyroid extract and thyroxine but is more persistent.

Sulfanilamide in Treatment of Fissured Nipples.—Magliano and Ivon Manara employed sulfanilamide in 15 cases of unilateral or bilateral fissured nipples. Sulfamidyl (4-sulfamido-2-4-diamino-azo-benzeno-hydrochloride) was administered in fractional doses of 0.32 Gm. twice daily for from three to eight days and in rare cases for twelve days. Pain disappeared within the first twenty-four or seventy-two hours of the treatment. Lactation was uninterrupted in most cases and resumed in the rest. The fissures healed in from six to twelve days, and after the crust had fallen off there were no permanent scars. Neither the mothers nor the infants exhibited toxic symptoms. There were no recurrences. More than half the number of the mothers were observed two months after discontinuance of the treatment. They reported on their ability to continue nursing without inconvenience. The drug had no effect on the quantity of milk secretion, which remained as abundant or as scanty as it was before administration of the drug.

Wiener klinische Wochenschrift, Vienna

53:475-494 (June 14) 1940. **Partial Index**

Appetite. F. Hamburger.—p. 475.
*Star-Shaped Cutaneous Telangiectases in Hepatic Cirrhosis and Its Diagnostic Significance. D. Čičovački.—p. 478.
Accidents in Blood Transfusions After Treatment with Azosulfamide and Uliron (Dimethyl-Disulfanilamide). H. Dibold and G. Kirchhofer. —p. 484.

Cutaneous Telangiectases in Hepatic Cirrhosis.—Čičóvački directs attention to star-shaped cutaneous telangiectases, which were observed in 23 of 41 cases of hepatic cirrhosis. Eppinger was the first one to call attention to these peculiar star-shaped vascular dilatations in patients with hepatic cirrhosis. They are reddish violet, roundish, pinhead to pea-sized spots, which have a central angioma-like elevation, from which delicate, meandering vessels radiate in all directions. Thus the formation has the shape of a star. Microscopic examination discloses that they are greatly dilated capillaries. These vascular dilatations are found only on the upper part of the body. Sites of predilection are the anterior thorax, the forehead, the shoulder, the forearm and the back of the hand. That the development of these star-shaped telangiectases is connected with the hepatic disease is proved by the fact that they increase in number and size with the progress of the cirrhosis. Occasionally some spots disappear and reappear later. That they are star shaped and not longish indicates that they are not the simple capillary dilatations of chronic alcoholism; moreover, they were detected also in cases of cirrhosis in which abuse of alcohol could be definitely excluded. Two factors are of diagnostic importance: First, these star-shaped cutaneous telangiectases appear only in cirrhosis of the liver, not in other hepatic disorders (gallstones, simple icterus and so on). Second, not all cases of hepatic cirrhosis show this symptom. Discussing the pathogenesis of the peculiar vascular dilatation, the author suggests a common constitutional cause for the hepatic cirrhosis as well as for the telangiectases. He directs attention to Chvostek's habitus, which is characterized by hypotrichosis of trunk, axilla and mons pubis, by growth of hair deep into the forehead, dense eyebrows and intense growth of beard, also by incretory changes such as enlargement of the pineal body with missing involution, small thyroid, changes in the hypophysis and atrophy of the sex glands. Persons with this habitus have a tendency to proliferation of the connective tissue not only in the liver but also in the other organs. Chvostek maintained that abuse of alcohol is not the only cause of hepatic cirrhosis, because it cannot always be demonstrated and the liver of some alcoholic persons remains unimpaired. The author observed that the majority of patients with hepatic cirrhosis and the star-shaped telangiectases had Chvostek's habitus, and he gives a detailed description of a case in which hepatic cirrhosis and Dupuytren's contracture developed almost simultaneously. These disorders were familial in that they appeared in father and daughter. The two disorders prove the tendency toward a proliferation of the connective tissue; that is, Chvostek's conception of the connective tissue diathesis of hepatic cirrhosis.

Acta Medica Scandinavica, Stockholm

105:193-312 (Oct. 16) 1940. **Partial Index**

*Bronchospirometric Study on Ability of Human Lungs to Substitute for One Another: I. Bronchospirometric Experiments in Which One of the Lungs Was Completely Cut off from the Respiration. H. C. Jacobæus and T. Bruce.—p. 193.
*Id.: II. Bronchospirometric Experiments with Both Lungs Breathing, One Nitrogen and the Other Oxygen, With or Without the Administration to One Lung of Carbon Dioxide in Such Concentration as to Prevent the Giving off of Carbon Dioxide from the Lung in Question. H. C. Jacobæus and T. Bruce.—p. 211.
Benign Lymphogranuloma (Schaumann's Disease) and the Eye. A. Lindau and Agne Lõwegren.—p. 242.
Iodine Content of Human Urine and Daily Diet in Finland. A. I. Virtanen and E. Virtanen.—p. 268.

Bronchospirometric Experiments on Human Lung.—Jacobæus and Bruce report bronchospirometric experiments on human subjects in whom tests were made for the ability of one lung to do duty for the other in normal oxygen consumption as well as when one lung was made to breathe nitrogen (95 per cent) or nitrogen plus carbon dioxide (5 per cent). In the first study the dyspnea induced by occlusion of one lung was tolerated without difficulty, the respiring lung increasing its ventilation so as to take over the normal bilateral oxygen intake and carbon dioxide output. Oxygen saturation in the arterial blood sank after the occlusion, because the blood flowing through the blocked lung could not be arterialized. The experiments, however, gave no information on the extent to which the occlusion affected the distribution of the cardiac output to the two lungs. The relative values of the cardiac minute volume obtained tonometrically by estimations of the pulse rate and blood pressure indicated that no increase in the minute volume took place during the occlusion. These occlusion experiments seem to be diagnostically valuable for the indication or contraindication of surgical intervention in pulmonary disease. In the second study, in which nitrogen and carbon dioxide were applied to one lung, no greater discomfort was observed. However, in experiments it was found that considerable dyspnea resulted when enough carbon dioxide was added to the nitrogen of the one lung to prevent the output of carbon dioxide from the lung, but not enough to necessitate abandonment of the experiments. The oxygen consumption during both the nitrogen and the carbon dioxide experiments was about as great as in ordinary bronchospirometry. The fact that as much carbon dioxide was given off from the oxygen-breathing as from the nitrogen-breathing lung demonstrated that the excretion of carbon dioxide can proceed independently of the oxygen intake. The oxygen saturation in the arterial blood fell when one lung breathed nitrogen or nitrogen plus carbon dioxide, because the blood passing through it could not be arterialized. In two experiments, regarded by the author as normative, the calculations pointed to an equal distribution of the blood to the two lungs. The relative values for the minute volume of the heart obtained tonometrically by determinations of the pulse rate and blood pressure indicated that no increase occurred in this volume during nitrogen bronchospirometry or in nitrogen in combination with carbon dioxide.

Book Notices

The Control of Tuberculosis in the United States. By Philip P. Jacobs, Ph.D., Director of Personnel Training and Publications. National Tuberculosis Association, New York. Revised edition. Cloth. Price, $2. Pp. 387, with 3 illustrations. New York: National Tuberculosis Association, 1940.

In this volume the author has presented the entire subject of the development of tuberculosis control work in the United States. Dr. Jacobs has always recognized the importance of the physician in the solution of the tuberculosis problem, and in many places throughout this volume he emphasizes the physician's part in the program. He quotes Osler's famous last words on the subject of tuberculosis to the effect that the leadership in the battle against this scourge is in the hands of the general practitioner. He states that the general practitioner in medicine is in a key position in relation to diagnosis of tuberculosis and to the initiation of treatment for the patient. He calls attention to how physicians in private practice have allied themselves with special tuberculosis associations and have done so much to control the disease. In his chapter on relations with the medical profession, the final paragraph states that "in the light of the experience presented in this chapter it may be said that, although tuberculosis is essentially a medical problem, the control of the disease, a community task, requires the cooperation of the physician in his professional capacity and as a citizen taxpayer with the other lay citizens of his community who comprise the tuberculosis association." Physicians everywhere are desirous of winning a final victory over tuberculosis as they have done with such diseases as smallpox, typhoid and diphtheria. Every physician who reads this book will find much valuable information which he can use in his daily practice, as well as information which will assist him in taking a greater part in the organized movement to control tuberculosis in the United States.

A Comparative Study of the Seasonal Incidence of Mortality in England and Wales and in the United States of America. By E. Lewis-Faning. Medical Research Council Special Report Series, No. 239. Paper. Price, 1s. Pp. 69, with 13 illustrations. London: His Majesty's Stationery Office, 1940.

The author has recently made a study of English and American seasonal mortality and presents a number of interesting observations. He has used the annual review of the Registrar General's Office for the English and Welsh material and the annual registration area statistics of the United States census for the period from 1931 to 1938; the crude death rates have been standardized for age though not for sex. He found that it was not necessary to correct for monthly shifts in the stratification of the population. In his analysis of the American material he has treated the New England group of states separately from the whole American area. This might seem proper because the wide range of climatic, racial-social factors involved in the consideration of the entire continental American area by comparison with the relatively compact and more homogeneous New England area does produce flattening of the mortality range.

In view of the fact that the British Isles have the presumptive advantage of a maritime climate by contrast to the more brusque continental climate of the United States, Lewis-Faning's observation that there is a winter disadvantage and a summer advantage of England and Wales over the New England states is of interest. The disadvantages arise largely from the greater English mortality from bronchitis, influenza, pulmonary tuberculosis and pneumonia. This, as he says in his preface, cannot well be accounted for on a climatic factor alone. If one considers general living conditions, it is most likely based on the fact that heating, housing and clothing are more adequate and food more plentiful for the New England population than for the English group.

Secondly, medical care is better as far as medical service, nursing and hospitalization are concerned, all of which would be particularly effective in reducing mortality and incidentally giving point to the gist of the study, namely that the winter and spring seasonal disadvantages of England might be overcome with more effective work in the direction of preventive medicine and social hygiene.

Unfortunately statistical analysis itself is inadequate for clear-cut conclusions. Even the basic population in the English-Welsh group by contrast to the New England group is decidedly different. Today the term New England does not connote a common hereditary environmental background. Large intrusions of Mediterranean strains (Italian, Jewish, Portuguese) and of French Canadian and Eastern European types have modified the genophase, and this human material has not yet undergone environmental selection in the new habitat in any degree comparable to the English and Welsh groups.

With these reservations in mind—reservations that Lewis-Faning clearly recognizes—the study is a valuable contribution and should be useful in emphasizing the significance of environmental factors, climatic and seasonal, social and economic, in the evaluation of disease and mortality.

Advances in New York City's Health: Annual Report of the Department of Health of the City of New York for 1939 with a Review of Developments from 1934-1939. Edited by Savel Zimand. F. H. LaGuardia, Mayor. John L. Rice, M.D., Commissioner of Health. Boards. Pp. 296, with illustrations. New York, 1940.

A chart showing the "conquest of pestilence in New York City" and the total death rate per thousand of population gives a dramatic introductory summary of the battle against disease for little more than a century. We see peaks made by cholera in 1832, 1849 and 1854. On the latter date the total death rate was 47, and from then on it fell steadily, though somewhat irregularly, to 10 in 1939. Each year has seen the scope of work extended. There was but one health center in 1933; there are thirteen today. New developments in the direction of school health and vital statistics services, supervision of food and drug control, sanitary service, public health nursing and industrial hygiene are suggested. The budget of the health department in the year just ended was $5,728,489. A total of 5,081,064 services and examinations were given to a population of approximately 7,600,000. The incidence of cases and deaths from diphtheria, typhoid and paratyphoid fever reached an all-time low. Only one death from measles was reported. Scarlet fever deaths were the lowest ever reported. For the first time since 1932 a case of smallpox was reported in the city. This story of things accomplished for the protection of health and of victories gained over disease and death is one which could doubtless be told in many other cities. The large population covered, the wide extent of activities, as well as the exceptionally thorough manner in which the facts are reported, give this metropolitan report distinction.

Das menschliche Knochenmark: Seine Anatomie, Physiologie und Pathologie nach Ergebnissen der intravitalen Sternalpunktion. Von Dr. med. Karl Rohr, Privatdozent an der medizinischen Fakultät der Universität Zürich. Paper. Price, 37 marks. Pp. 286, with 217 illustrations. Leipzig: Georg Thieme, 1940.

During the past few years there have been several monographs on bone marrow aspiration published in Europe. This monograph is by far the most complete and comprehensive. It is divided into two sections. In the first section the author considers the history of the methods of bone marrow study and then takes up the technic of sternal puncture in detail, giving complete information as to the precise method, the needles used, and illustrations of normal marrow in photomicrographs and colored drawings. Embryogenesis of the various cells are next considered. The anatomy of the blood-forming organs and special cell morphology is taken up in some detail and is beautifully and accurately illustrated with photomicrographs and colored plates. The physiology of the bone marrow is concisely summarized and the regulatory mechanism of cytogenesis is explained. The pathology of the bone marrow is considered under the headings of hypoplasia and hyperplasia. The second section is devoted to disturbances involving the erythroid, myeloid, megakaryocytic and lymphatic tissues. Panmyelophthisis is discussed under a separate heading. The diseases of the bone marrow reticulum are next considered. The final discussions are devoted to malignant tumors of the bone marrow and symptomatic changes in the bone marrow as a result of

various infectious diseases. The monograph is concluded with an exhaustive but carefully selected bibliography including a special list of monographs available on sternal puncture. The illustrations both black and white and colored are superior to anything seen in previous monographs on sternal puncture and are particularly helpful. The text is carefully edited and organized and the subject material is well documented. Hematologists and pathologists will find this monograph a most useful addition to their library.

Synopsis of Materia Medica, Toxicology, and Pharmacology for Students and Practitioners of Medicine. By Forrest Ramon Davison, B.A., M.Sc., Ph.D., Assistant Professor of Pharmacology in the School of Medicine, University of Arkansas, Little Rock. Fabrikoid. Price, $5. Pp. 633, with 45 illustrations. St. Louis: C. V. Mosby Company, 1940.

Though he has not attempted that reorientation without which there would scarcely seem to be good reason for the production of another textbook in pharmacology, the author of this new work has nevertheless trodden the old road in a surprisingly refreshing manner. The book has much merit: it is inclusive, up to date, sufficiently exhaustive for ordinary textbook purposes and extremely readable. Many of Jackson's fine tracings and colored diagrams are borrowed to enrich its pages. The bibliographic references are numerous and evince the author's wide acquaintance with the literature of his subject. There are a few bad printing errors to be corrected before the work goes to press again. The type is very small, but this disadvantage is certainly outweighed by the small size of the volume and by its low price. Unfortunately, there is not enough of the experimental science of pharmacology and there is too much of therapeutics in the book, but it remains to be seen how serviceable this presentation will be in combination with the wide variety of laboratory courses in pharmacodynamics available in our schools nowadays. This new book fully deserves and will surely have a thorough trial by teachers and students this year.

Preface to Eugenics. By Frederick Osborn, Research Associate in Anthropology, American Museum of Natural History, New York. Cloth. Price, $2.75. Pp. 312, with 12 illustrations. New York & London: Harper & Brothers, 1940.

An up-to-date knowledge of eugenics is no doubt a necessity for medical men. Although this constitutes "a new responsibility for an already overburdened profession, it is also a new opportunity for service, perhaps one of the greatest that remains after the conquest of the infectious diseases." Today many couples, Osborn points out, undoubtedly restrict the size of their families because of fear that their children may inherit some familial defect. In the present state of knowledge they must act on insufficient grounds, for doctors are not trained to give advice of this sort and there is no one else to whom they can turn. "Only the doctor sees in intimate detail the interplay of environment and heredity in which disease and defect may develop, and therefore he alone is qualified to diagnose and interpret the results." The problems which these factors present are by no means academic in nature. Even with our present limited knowledge and with the rudimentary methods available, Osborn estimates that the number of feebleminded could be reduced by 150,000 a generation for several generations and the number of the schizophrenic and the manic depressive by possibly a like amount.

In order to see the picture in its entirety it is essential to have a working knowledge of the facts of heredity—the known hereditary defects and their mechanism of transmission, the behavior of the genes and chromosomes, the present trends of population both quantitatively and qualitatively, and the eugenic objectives which may be considered reasonable in the light of proved scientific knowledge. In discussing each of these questions Osborn has done a remarkable job of condensation and selection from the vast amount of modern information available. The book is well written and lacking in technical detail, which might interfere with its ease of use. The orientation of the eugenic movement in the light of social policies, nutrition, housing, medical care, recreation and research should be matters of general knowledge. The responsibility of facing these problems is tremendous but "to such a call the doctor has never failed to respond."

Obstetrics in General Practice. By J. P. Greenhill, B.S. M.D., F.A.C.S., Professor of Obstetrics and Gynecology, Loyola University Medical School, Chicago. Cloth. Price, $3.50. Pp. 448, with 112 illustrations. Chicago: Year Book Publishers, Inc., 1940

This intensely practical volume reviews in succinct form the knowledge which every safe practitioner of obstetrics must possess. By eliminating historical data, controversial matters and theory, the author has encompassed in a small book the salient facts of everyday clinical obstetrics. Chief attention is devoted to diagnosis, indications and contraindications for operation, prognosis and treatment. The sections on therapy are sound and are presented in such specific detail that they should be of real benefit to the general practitioner. The volume incorporates, moreover, all the more important recent advances; it discusses, for example, roentgen pelvimetry and placentography, sulfanilamide in puerperal infection and the new classification of the toxemias of pregnancy sponsored by the American Committee on Maternal Health. The little chapter on circumcision, a topic not often touched on in obstetric works, should prove most welcome. In sum, Dr. Greenhill's volume can be recommended to general practitioners of obstetrics as a valuable postgraduate course in the "diurnalia" of obstetrics. The format is attractive and the illustrations are well chosen and informative.

Dog-Team Doctor: The Story of Dr. Romig. By Eva Greenslit Anderson, Ph.D. Cloth. Price, $2.75. Pp. 298, with 21 illustrations. Caldwell, Idaho: Caxton Printers, Ltd., 1940.

The Moravian church sponsored the medical training of young Joseph Herman Romig, who was to dedicate his life to the welfare of the Eskimos in Alaska. Forty-four years ago he went there with his bride and a promise of an expense account of $50 a year, but no salary for seven years. They were virtually alone in administering to the medical needs of the people of southwestern Alaska for years. There were remnants of Russian occupancy, trappers and adventurers from all corners of the earth when he arrived in this bleak land. Through the days of the Klondike gold rush, days when river traffic grew to hundreds of craft, days of building of railroads and highways and the development of the fishing industry to the present, when the airplane has conquered these wide spaces, Dr. Romig has seen and shared in them all. He has been not only a medical missionary but a superintendent of schools, mayor of Anchorage, a railroad surgeon, a United States commissioner and an expert with a dog team which carried him hundreds of miles over the snow to administer to the sick. This story of his life work reads almost like fiction. Now a modern hospital has been built in Anchorage and the practice of medicine is much simpler. Dr. Romig is living retired at Anchorage, Alaska, but his son is practicing medicine there.

Test Tubes and Dragon Scales. By George C. Basil, M.D. In collaboration with Elizabeth Foreman Lewis. Cloth. Price, $2.50. Pp. 316, with illustrations. Chicago, Philadelphia & Toronto: John C. Winston Company, 1940.

This book relates numerous incidents that occurred in China when a young American physician went to Chungking to become busily engaged in medical work in an American founded hospital. Chungking, now the capital of China, was founded about 2200 B. C. This prosperous port at the confluence of two rivers clung to its ancient pattern of existence until a short time ago, when war forced the removal of China's capital back into the deep interior. When Dr. Basil left Chungking in 1932 the city was almost the same as it had been centuries before. His patients had been mostly poor Chinese, but some of them were generals, politicians and communists, as Chungking formerly was the center for the Chinese Communist army, which later threw all its strength into the defense of China against a foreign aggressor. This experience gave the author opportunity to look into the ancient Chinese pharmacopeia and medical practice and to get occasional glances into the military and political life of this then hoary Chinese community. Dr. Basil was born in 1902 and graduated from the University of Maryland School of Medicine, Baltimore, in 1927. He now practices medicine in Annapolis, Md.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CHRONIC RESPIRATORY INFECTION AND CLIMATE

To the Editor:—**Two patients, mother and daughter (about 8 years of age), are both subject to continual colds during the winter months. The condition in each one takes the form of a catarrhal infection of the upper respiratory passages and has resisted the usual remedial treatments. They live in the mid Hudson valley, where fogs and dampness are prevalent. The husband is a fruit tree expert and as a change of climate is being considered he will be obliged to select the region for his family's residence accordingly. Can you point out to me the regions in the New England and Middle Atlantic states that have a drier climate? I have heard it said that Maine is a good state for cases of this kind.**

M.D., New York.

ANSWER.—Migration for well established catarrhal states of the upper respiratory passages is scarcely worth considering unless it can be to the nonstormy regions of the Southwest. The frequency and severity of sudden storm changes in the weather seem to be an important causative factor in the genesis of respiratory infections and in the maintenance of such troubles once they have become chronically established. There is no nonstormy region in the northeastern part of the United States. Maps showing the courses followed by storm areas in their passage across the continent have recently been published (Mills, C. A.: Medical Climatology, Springfield, Ill., Charles C. Thomas, 1939) and on these maps it is seen that any migration to avoid storm effects must be to the Southwest. New Mexico, Arizona and southern California offer the only regions free from winter storminess. Fortunately for the family in question, that region has a considerable fruit-growing industry. Since the query referred only to migrational possibilities, no other phases of the handling of nasal catarrh are considered in this reply.

PREECLAMPTIC EDEMA

To the Editor:—**Ammonium chloride and ammonium nitrate have been successfully employed in the management of edema, particularly that of cardiac origin. In preeclampsia, however, it seems that the mechanism of edema formation is not well understood; furthermore, one of the basic objectives of most treatment routines is the prevention of acidosis. Is the use of these drugs in the management of preeclamptic edema (unaccompanied by frank acidosis) (*a*) permissible, (*b*) rational, (*c*) effective? Are mercurial diuretics indicated?**

M.D., Illinois.

ANSWER.—It is quite true that the mechanism of preeclamptic edema is not solved. It is obviously not cardiac in origin and not attributable primarily to albuminuria and hypoproteinemia. Presumably, some endocrine disturbance may be the chief factor in view of the striking effects of the estrogens and adrenal cortex extract on water and salt balance. Whether these substances act on the renal tubule alone or on the tissues in general is not established. In either case the treatment of preeclamptic edema involves the same general principles as other types of edema—rest, restriction of salt and water, and the use of diuretics. Since there is no significant acidosis in preeclampsia, ammonium salts may be given and will be effective provided the patient can tolerate them. Gastrointestinal irritation may limit their usefulness. Mercurial diuretics are not contraindicated if renal function is satisfactory. For some unknown reason, however, little diuresis ordinarily results. This fact perhaps supports the theory of the renal site of action of the edema producing mechanism.

INSPECTION OF CONJUNCTIVA

To the Editor:—**Please outline for me the known methods of inspecting the upper angle of the conjunctiva.**

E. R. Hargett, M.D., Springfield, Ohio.

ANSWER.—The methods of inspecting the upper angle of the conjunctiva, by which is undoubtedly meant the conjunctiva lying in the cul-de-sac formed by the upper lid at the upper rim of the orbit, where it approximates the globe are: 1. According to the description in Gifford's textbook "This may be done while facing the patient, if the head is supported by a headrest. For convenience in using ordinary chairs, it is best to stand behind the patient with the head resting against one's body. The patient is asked to look down. With the thumb and forefinger of the right hand, the eyelashes of the upper eyelid are grasped and the lid is pulled downward and away from the globe. The forefinger of the left hand is now used to press against the upper edge of the tarsus, through the skin, while the right hand pulls the eyelid quickly upward over the left forefinger as it holds the tarsus. The left hand is now removed and the lash border is held against the upper orbital rim while the tarsal conjunctiva is examined. An applicator or tooth pick may be used to replace the left forefinger, but it is less convenient as it requires to be held in place, while, when the eversion is completed as described the left hand remains free and for necessary manipulations and treatments."

2. A hand lid evertor may be purchased from any surgical or optical supply house. The evertor has a flange by means of which the entire upper lid is spread out and the cul-de-sac readily exposed.

3. Frequently, an ordinary lid clasp forced as far back as possible on the lid and then causing an eversion of the lid will readily expose the angle of the conjunctiva.

It is absolutely necessary that the eyeball be directed downward, as this pull on the bulbar conjunctiva adds in spreading out the loose conjunctiva of the upper angle where it meets the palpebral portion.

NUMBNESS OF FACE AND MIGRAINE

To the Editor:—**For several months I have been giving ergotamine tartrate (gynergen) for migraine headaches. I give 0.5 cc. (0.25 mg.) at the beginning of the menstrual period, at which time the headache begins, and get relief inside an hour, which headache does not return till the next period. No other treatment is of any avail. The most recent headache was just treated in the same way. The patient states that from two weeks ago till now she has had a constant feeling of slight numbness and tingling of the left side of the face. Isn't it possible that the ergotamine tartrate is not the causative agent of her symptoms, owing to the fact that toxicity generally shows by those symptoms in the extremities rather than in the face, that these symptoms are really noticeable only when the patient is nervous (which is often), that the effective dose is small and not repeated for a month, that her symptoms started two weeks after the last dose, that the patient is slightly anemic and that she is conscious of herself and intelligent and likely to have found out the possible toxic effect? What would you advise?**

S. J. Hyman, M.D., Inkster, Mich.

ANSWER.—The symptoms described following treatment with ergotamine tartrate for migraine headache suggest a neurosis or possibly a vascular lesion of the posterior fossa. With respect to the latter, it would be wise to obtain a careful examination of the cranial nerve and other central nervous system function. X-ray films of the skull and lumbar puncture are indicated. Such pathologic change might be in the nature of an aneurysm (which could account for the headache) or a tumor in the pontile angle or, finally, a vascular lesion in the medulla, which in turn might or might not be due to vasoconstriction following ergotamine therapy. It is unlikely that ergotamine tartrate is the cause of the patient's symptoms. It is likely that they are psychogenic but it is more probable that they have recently become a part of the migraine syndrome itself. Occasionally a mixture of trigeminal and migraine symptoms occurs in the same patient. Their constancy, however, suggests a possible vascular lesion. It would be wise to omit the treatment until all aspects of the problem have been thoroughly studied.

An attempt might be made to control the headache by inhalation of 100 per cent oxygen at 7 liters per minute for an hour to two hours, thus giving one a chance to study the facial paresthesias in the absence of ergot therapy. The use of vitamin B complex might lessen the paresthesia.

POLLEN AS CAUSE OF ASTHMA WITHOUT HAY FEVER

To the Editor:—**Several patients with asthma react severely to ragweed pollen extract in the scratch test. They do not appear to have symptoms of hay fever, but all have asthma at various times of the year and also during the early fall when the ragweed season is on. While the other reaction gives some clues to the asthmatic attacks from various sources, the question arises whether these patients need protection from ragweed pollen. In other words, does ragweed pollen cause bronchial asthma in some persons and hay fever in others? As I have observed a strong reaction of this sort in a large number of cases, the solution of this problem is quite important.**

Paul Lahvis, M.D., Gowanda, N. Y.

ANSWER.—Ragweed pollen and other pollen not infrequently are the cause of asthma in the absence of hay fever. In many such instances the hay fever has been present earlier in the career of the patient's allergy; in others, nasal symptoms have never manifested themselves. This situation should not be surprising in view of the fact that asthma is not uncommonly caused by other inhalants in the absence of rhinitis. In the conditions described in the question, some additional observations might be significant in reaching a decision. Does the asthmatic patient consider autumn one of his bad periods? Did he, at the beginning of his asthma career, have fall asthma

as his initial allergic experience? Even if these questions are answered in the negative, it is still possible that ragweed pollen may be an etiologic factor. A test which might help is the insufflation of a moderate quantity of the dry pollen. An asthmatic attack following would lend strength to the belief in this antigen as a significant cause; a negative result, however, would not disprove that possibility. It is important, of course, to remember that a violent and prolonged attack may result from such a procedure. In case of any doubt, the stand should be taken that the safer and wiser course to follow is to treat such patients with pollen extracts rather than to fail to do so because of some degree of uncertainty of the etiologic role assumed by the pollen.

RECURRENT CARBUNCLES

To the Editor:—**A patient with recurrent carbuncles about the neck and back has tried many treatments for five years without success. Please give me a suggested dosage of sulfathiazole for such a condition. How long a time should medication be continued? The patient is 17 years old.**

M.D., Massachusetts.

ANSWER.—In recurrent furunculosis and carbuncles the following treatment may be attempted: Staphylococcus toxoid may be administered in order to prevent the development of new lesions. Full strength staphylococcus toxoid (containing 1,000 units of toxin per cubic centimeter) may be given subcutaneously. The first dose would be 0.02 cc., with subsequent doses of 0.04 cc., 0.07 cc., 0.10 cc., 0.15 cc., and 0.20 cc. at intervals of four days. Local erythema may be noted at the site of injection, and sometimes fever occurs. In addition, in the acute phase in an adult, one can administer sulfathiazole, giving an initial dose of 4 Gm., followed by 1 Gm. every four hours until definite improvement is noticed, at which time the dose may be cut to 1 Gm. four times a day, this to be kept up until the infection is completely under control. Frequent hot saline compresses or fomentations should be applied to the local lesion. Incision should be employed after definite fluctuation develops in order to evacuate the pus and necrotic material. Great care must be taken to avoid the incision of uninfected tissue and of tissue with nonfluctuant cellulitis.

PROSTIGMINE METHYLSULFATE TEST FOR PREGNANCY

To the Editor:—**A pamphlet on the use of prostigmine methylsulfate as a test for pregnancy states that if used as described it is a safe, reliable and accurate test for pregnancy, having the same degree of accuracy as the Friedman test. I am interested in this test and would appreciate any comment, especially as to its safety in pregnancy and its accuracy.**

T. T. Rackliffe, M.D., Los Angeles.

ANSWER.—In an article published by Soskin, Wachtel and Hechter in THE JOURNAL May 25, 1940 on the treatment of delayed menstruation with prostigmine methylsulfate it was concluded that prostigmine methylsulfate had no effect on early or prolonged amenorrhea due to endocrine dysfunction or to local organic changes. Also, experimenting on animals and man, these authors conclusively demonstrated that prostigmine methylsulfate does not initiate menstrual flow when the delay is caused by pregnancy. On the basis of constancy of the results on pregnancy (i. e. absence of bleeding) they concluded that it is a therapeutic test for pregnancy.

Since they injected 2 cc. of a 1:2,000 solution of prostigmine methylsulfate on two or three successive mornings in twenty-three known pregnant women without causing a disturbance in the pregnancy, it seems that the test is a safe one. However, since they claim that the test is not entirely reliable in endocrine disturbances, menopause and local conditions, procedures necessary to rule out these exceptions are of such magnitude as to make the test far inferior to the Friedman or the Aschheim-Zondek test. In the Friedman or the Aschheim-Zondek test a negative reaction rules out the possibility of pregnancy in at least 98 per cent of the cases.

A communication in the correspondence column of THE JOURNAL Dec. 14, 1940, page 2103 reports the test ineffective in 4 cases.

ECHINOCOCCUS INFECTION OF LIVER

To the Editor:—**Please let me know what is the modern acceptable treatment for echinococcus infection of the liver.**

M.D., New Jersey.

ANSWER.—The best treatment of echinococcus infection of the liver is prophylaxis. This should consist of avoiding, as far as possible, intimate companionship with dogs. Persons should wash their hands thoroughly after handling dogs. Foods should be thoroughly cleaned and washed before eating. Care should be taken that drinking water has not become contaminated.

Many drugs have been tried in the treatment of this disease. Some favorable results have been reported in individual cases, but the number of patients who have been treated with any one drug is not sufficient to warrant the recommendation of the drug. There is no specific drug for the treatment of echinococcus infection of the liver. As far as is known, none of the newer drugs such as the sulfamido compounds have been used successfully in the treatment of this infection. It is believed that these drugs would not be efficacious in the treatment of parasitic infections.

A former mode of treatment, such as aspirating the cyst, has been largely discarded because of the danger and because of the hazard of spreading the infection. The injection of certain antiseptic substances such as phenol, alcohol, iodine and solution of formaldehyde has largely been discarded.

If the parasite dies and the cyst becomes calcified, no treatment is indicated. If the cysts become large and troublesome they should be excised. If they become suppurative they should be incised and drained.

COHESION BETWEEN VISCERAL AND PARIETAL PLEURA

To the Editor:—**Normally one defines negative intrathoracic pressure as the difference between the pull of the elastic tissue in the lungs to collapse them and the intrapulmonic pressure which holds the visceral pleura in contact with the parietal at all times. The question arose as follows: A patient developed pleurisy and it was discovered that the visceral pleura of the entire right upper lobe of the lung became adherent to the parietal pressure, thus obliterating the potential space responsible for the negative pleura had the patient not developed pleurisy in that particular area. Is negative pressure still present in the area when the entire visceral pleura has become adherent to the parietal pleura, assuming that the right middle and lower lobes and pleura are still normal? Are the forces defined under negative pressure normally still present when one develops a pleurisy and as a result the pleurae become adherent?**

M.D., N. Y.

ANSWER.—To speak precisely, there is no negative pressure in the pleural cavity because under normal conditions there is no pleural cavity. The retractile force of the stretched lungs is exerted against the cohesive force between the visceral and parietal layers of the pleura. When these two layers have become adherent, the force is still exerted in the same direction. Instead of being exerted against the cohesion of the two layers, it is now exerted through the adhesions and so, as under normal conditions, is transmitted to the ribs, intercostal tissue and even the overlying muscles, fat and skin, as is evidenced in thin persons by the retraction of the intercostal spaces on deep breathing. This retraction occurs whether or not there are adhesions.

RAPID DEVELOPMENT OF UTERINE FIBROMYOMAS

To the Editor:—**Please let me know whether it is possible for a fibroid tumor of the uterus the size of a three months pregnancy to grow within a period of three months. The patient was operated on and a fibroma of the uterus was removed. The symptoms of bleeding existed only during and following the last period two weeks before operation and there were no other symptoms previously. Have any fibroids at any time been known or recorded anywhere that have grown so rapidly in so short a time?**

M.D., New York.

ANSWER.—It is possible for a fibroid tumor, not palpable on examination by a skilled gynecologist, to develop to the size of a three months pregnant uterus within a period of three months. This statement should not be made without explanation. In most instances the supposedly rapid increase in size is ascribable to failure to recognize the true size of the growth at the time of the preliminary examination. Nearly all tumors which have really developed rapidly reveal evidence of excessive vascularity, hemorrhage into the tumor, necrosis with infection or malignant degeneration. Pure myomas also develop rapidly in a moderate percentage of cases, in contrast with firmer fibrous or fibromyomatous growths.

ESTROGENIC SUBSTANCE AND MIGRAINE IN MEN

To the Editor:—**Some of my colleagues have been using injections of estrogenic substance to prevent or delay attacks of headache and nausea in women suffering from migraine. I have used it to a limited extent with encouraging results in women. A man aged 26 has suffered from fairly typical migraine since childhood. I wish to ask your advice on the use of estrogenic substance or some comparable substance for the control of migraine in men.**

Edward Blair, M.D., Healdsburg, Calif.

ANSWER.—Although there are many favorable reports concerning the use of estrogenic substance for women suffering from migraine, several years' observation of this type of treatment has in other hands shown rather questionable results. So far as known, such type of treatment has not as yet been used for men.